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IDENTIFICATION

**Insights in cognitive patterns:
Essays on heuristics and identification**

By: Marloes Röthengatter

HEURISTICS

Insights in cognitive patterns: Essays on heuristics and identification

Proefschrift

ter verkrijging van de graad van doctor aan Tilburg University op gezag van de rector magnificus, prof. dr. E.H.L. Aarts, in het openbaar te verdedigen ten overstaan van een door het college voor promoties aangewezen commissie in de aula van de Universiteit op
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To Siebe, always highly significant

Table of contents

CHAPTER 1 INTRODUCTION TO THE STUDY	2
BACKGROUND	2
RESEARCH QUESTIONS AND DISSERTATION STRUCTURE.....	5
CHAPTER 2 A BIAS IN HEURISTICS: RATIONAL VERSUS INTUITIVE INFORMATION PROCESSING	9
INTRODUCTION	11
THEORETICAL BACKGROUND AND THREE HYPOTHESES	13
METHOD	18
RESULTS	22
DISCUSSION	34
CHAPTER 3 A SAFE BET OR EVERYTHING ON RED: THE ROLE OF PROJECTION BIAS IN VOTING	46
INTRODUCTION	48
THEORETICAL BACKGROUND: UNCERTAINTY, RISK, BIAS AND AMBIGUOUS STRATEGIES	52
TWO HYPOTHESES.....	54
METHOD	58
RESULTS	71
DISCUSSION	86
CHAPTER 4 ORGANIZATIONAL IDENTIFICATION AND TASK AUTONOMY: COMPLEMENTARY OR COMPETING FACTORS?	96
INTRODUCTION	98
THEORETICAL BACKGROUND	100
THREE HYPOTHESES.....	102
METHOD	108
RESULTS & DISCUSSION	115
CONCLUSION	121
CHAPTER 5 A SAFE BET OR EVERYTHING ON RED: THE ROLE OF EUROPEAN AND NATIONAL IDENTIFICATION IN VOTING	124
INTRODUCTION	126
THEORETICAL BACKGROUND	128
THREE HYPOTHESES.....	132
METHOD	135
RESULTS	145
DISCUSSION	157
CHAPTER 6 GENERAL CONCLUSION	169
MAIN CONTRIBUTIONS.....	169

LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH	171
REFERENCES	173

Chapter 1

Introduction to the study

Background

My interest in research developed quite some years before I started my PhD. In that period, I was not quite sure what my main research interest was. At that moment, I believed I was interested in almost everything. I read papers on innovation, entrepreneurship, organizational behavior, management up to political science. It took me some time to understand that all the studies which I read with so much passion all had one thing in common. Although these studies all took place in completely different settings, they all in their way tried to explain the why behind the behavior of people. It were these cognitive processes that fascinated me as understanding them more or less gives insights in who people are. It were these processes that are active every waking moment helping us interpret information and helping us form an opinion and act on it.

Cognitive psychology is a popular research area as it helps us to understand other people and their thought processes. It studies the internal processes of the mind. The thinking, feeling and behavior of people are directly associated with these processes. In this dissertation, we focus on cognitive patterns. People are inclined to find patterns in everything they sense, even if there is no pattern to discover. Humans use action-oriented mental patterns (André, Borgquist, Foldevi, & Mölsted, 2002; Tversky & Kahneman, 1974) as rules of thumb, so called heuristics, in speedy decision-making. At the same time, we see this desire for pattern finding in social orderliness, in cognitive social psychology, when studying identification. In this dissertation, we

study the antecedents and consequences of two important cognitive processes, namely heuristics and identification.

Heuristics

Decision-making theory has tended to focus on rational decision-making; Decision-making in which analytic processes guide choice behavior. Since Simon's work (1955) empirics have however shown us that in reality this is often not the case. In practice we have seen that intuition and or emotions can play a role in decision-making, especially when individuals are confronted with a complex problem (Gilovich & Griffin, 2002). Therefore, people deviate from the normative rational model. In situations like these the brain makes use of mental shortcuts instead of a detailed analysis of all available information to process information (Skitmore, Stradling, & Tuohy, 1989). These shortcuts are called cognitive heuristics.

We need these shortcuts used by the brain in decision-making to solve complex problems and make judgements. These cognitive mechanisms or decision rules most times come up with a quite acceptable solution to the problem with which the individual is confronted. But in aiding us and speeding up the decision-making and problem solving they sometimes can lead to "severe and systematic errors" (Tversky & Kahneman, 1974, p.1124).

Research has been flourishing since the late 1960s early 1970s onwards (when Tversky and Kahneman published a series of papers on this matter) (Gilovich & Griffin, 2002). Initially studies were limited to laboratory settings which led to a stream of critique in which scholars were accused of "devising parlor tricks, which people are susceptible to in the laboratory context but either do not encounter or could solve in real world contexts" (Nisbett, Krantz, Jepson, & Kunda, 1983, p.360). These critics pushed research into an applied setting (Heath & Tindale,

1994). Its importance has been acknowledged in many fields by spreading beyond academic psychology (Gilovich & Griffin, 2002) but still there remains a lot to uncover in this research area.

In this dissertation we aim to gain more insights into the information processing that may lead to heuristics. Additionally, we study one heuristic in voting preferences taking a rather new approach towards understanding voting ambiguity.

Identification

Identification is a “cognitive expansion of the self” (Edwards, 2005; Rousseau, 1998 p. 217). It describes the cognition of oneness (Ashforth & Mael, 1989). It is an internal model answering the question who am I?

Social identity theory, self-categorization theory, and to a lesser extent identity theory are at the heart of the concept of identification (Ashforth, Harrison, & Corley, 2008). Identity theory focusses on the self, and how the self is attached to the meaning people give to the different roles they typically play in societies (Stryker & Burke, 2000). As each individual has an identity for each of these roles, the self is seen as an multifaceted entity.

Although social identity theory confirms the view of a self that is composed of multiple identities (Hogg, Terry, & White, 1995), it stresses social categorization, rather than roles, attempting to explain group processes and intergroup relations (Hillman, Nicholson, & Shropshire, 2008; Hogg et al., 1995; Pratt & Foreman, 2000). People need social categorization to structure and order their social environment (Ashforth & Mael, 1989; Tajfel & Turner, 1979) so they can define others and themselves (Ashforth & Mael, 1989; Tajfel & Turner, 1986). The

prototypical characteristics of a category are transferred to a person in this category. (The literature on stereotyping shows these assignments are not *per se* reliable.)

Henri Tajfel was one of the first to write about social identity in the early 1970's. One of the main insights from his work is that social context has an important role in how cognitive processes play out. This social context focus placed the concept of identification in the research area of social cognition. Social identity theory has dominated research on intergroup relationships (Capozza & Brown, 2000). As the theory is comparatively young and it complements many other theories (so its applicability is substantial), a lot of research opportunities remain unexplored.

In this dissertation we combine insights from organizational identification with literature on autonomy to examine its role in an organizational setting. Moreover, we use theoretical insights to come up with a new explanation in predicting voting ambiguity.

Research questions and dissertation structure

We performed four studies to answer our research questions, resulting in four papers. Two on heuristics and two on identification. We did two in-depth studies regarding a critical position we have chosen to take in, regarding current literature in the field (Chapters 2 and 4). And two studies in which we take a complementary perspective (Chapters 3 and 5).

In our first two papers we study heuristics. The first study helps us to gain more insight in the cognitive processes behind different heuristics by answering the research question: Which people are more prone to heuristics, rational or intuitive information processors? In Chapter 2 called "A bias in heuristics: Rational versus Intuitive information processing" we study dual

processing models, which are popular in cognitive as well as social psychology. We study rational versus intuitive information processors and their susceptibility to different heuristics. We examine the risky choice heuristic, the representative heuristic and the availability heuristic. Extant literature generalizes across different vignettes for heuristics. We test different vignettes for the three heuristics. We conclude that researchers should be careful in choosing the vignette that is used to measure a specific heuristic, as results in the literature are being generalized but we clearly find differences between different measurements of the same construct. We also add to the literature on dual information processing by finding a significant interaction effect between rational and intuitive information processing, an effect theoretically described but not empirically shown so far.

For our second paper we focus on one heuristic and study preferences as an outcome of the process. The research question addressed here is: How does projection bias affect voting preferences? In Chapter 3 “A safe bet or everything on red: The role of projection bias in voting” we examine one specific not that often researched heuristic, namely projection bias, and examine if it can partially explain preference for ambiguity in voting behavior. The data was collected in the Netherlands, a country with extensive multiparty competition and low party affiliation. An experimental setting was chosen to obtain purer results for the measurement of projection bias by excluding many diluting effects. We examine the effect on the antecedent of behavior, voting preference, giving more insights in preference for ambiguity in voting. We do not rely on a self-reported measurement of risk, which might not capture actual risk behavior. We measure actual risk behavior by including a lottery game in our survey. Our empirics show issue-specific effects, and suggest that projection bias influences a voter’s preference for ambiguity independent of the risk attitude of the voter.

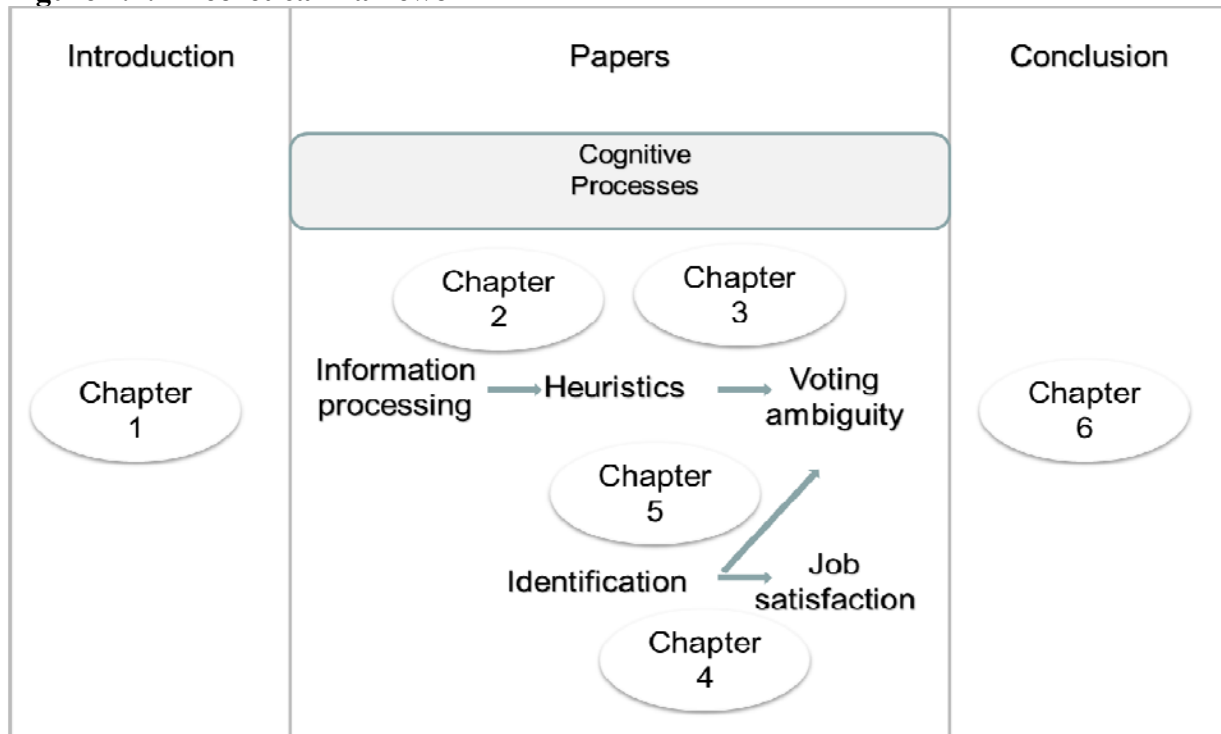
Chapter 4 and 5 focus on identification. In Chapter 4 “Task autonomy and organizational identification: Not always a good thing?” we take a critical approach to identification, and suggest that the relationship between organizational identification and job satisfaction might be influenced by task autonomy. We explore this relationship within an organizational setting. We study autonomy and identification effects as the relationship between these two variables is not clear. Literature has been stressing the positive sides of organizational identification neglecting the complexity of the concept regarding other influencers like task autonomy. We obtain more insights on identification by distinguishing between organizational and professional identification. Our results imply that a negative interaction effect exist between task autonomy and organizational identification. Our analyses show this is due to a buffering effect which reduces the potential negative effects that can arise from low levels of task autonomy.

Our last empirical paper continues with study two: The experimental study. In Chapter 5 “A safe bet or everything on red: The role of European and national identification in voting” we again look at two different levels of identification (in this case European and national identification) while studying the effect on the behavioral antecedents of voting preferences. We answer the question: How does identification affect voting preferences? We again observe issue-specific effects. We find some results indicating a positive relationship between identification and precise voting but also opposing results. We believe that the positive effect can be explained by the meaning maintenance model and fluid compensation which explain that people have a tendency to stress certainty when confronted with uncertainties. The negative effect might be explained by prospect theory, as the perception of change might be perceived as a loss triggering a preference for ambiguity. We tested for two potential moderation effects. The first moderation effect is the importance of the issue. We find a positive moderation effect for one issue for one

type of identification, opposing our hypothesis. The second potential moderation we researched is the salience of the issue. We do not find any significant effect here.

In the final chapter of this dissertation we compare heuristics and identification effects and derive general conclusions from our studies and give future research suggestions. Figure 1.1 gives a visual representation of the structure of this dissertation.

Figure 1.1: Theoretical framework



Chapter 2

A bias in heuristics: Rational versus intuitive information processing¹

Abstract

Heuristics are as intuitive tools that are based on a deviation from rationality. This suggests a negative relationship between heuristics and rational information processing, and a positive relationship between heuristics and intuitive information processing. To improve the understanding of rational and intuitive information processing we test the relationship between these information processing styles with various heuristics and different vignettes of each heuristic. We find a negative relationship between rational information processing and certain heuristics. Results on intuitive processing, by contrast, are less clear, indicating a more complex relationship between intuitive processing and heuristics. We find variations not only between heuristics themselves, but also between different vignettes of the same heuristic. We further find evidence of an interaction effect between rational and intuitive information processing, suggesting a more comprehensive relationship between the two information processing styles. Our paper contributes to the literature on dual processing and sheds new light on heuristics literature.

¹ This chapter is the result of joint work with Daniela Blettner.

Key words

Dual information processing, biases and heuristics, intuitive information processing, rational information processing, decision-making.

Highlights

- Rational information processing is negatively associated with one representativeness heuristic vignette and with the Asian disease vignette of risky choice framing. However, rational information processing was not related to the availability heuristic, and we find a positive relationship between rational information processing and a second representativeness heuristic vignette.
- Intuitive processing, by contrast, is significantly related to the availability heuristic (visual version).
- A significant negative interaction effect between rational and intuitive information processing is found when respondents have to contend with one vignette of the representativeness heuristic.
- We explore different vignettes per heuristic and conclude that the results differ substantially across vignettes. We offer potential explanations for these mixed results resulting in practical tips for future research.

Introduction

Kahneman and Tversky define heuristics as “pitfalls of intuition” (1977, p.2) and Gilovich and Griffin (2002, p.3) consider heuristics to be “*intuitive* responses to even the simplest questions about likelihood, frequency, and prediction”. Hence, it seems reasonable that heuristics are associated with intuitive information processing. Intuition is oftentimes seen as opposite to rationality (Sadler-Smith, 2008). From this follows that rationality should be negatively associated with heuristics. However, rationality and intuition operate at the same time (Kahneman, 2003b). Goldberg, for instance, argues “in virtually every decision there is always some intuitive component” (Goldberg, 1989, p.73). This simultaneous presence of rationality and intuition, however, is not well understood and underrepresented in the literature (amongst others Dane & Pratt, 2007).

To improve the understanding of rational and intuitive information processing we test the relationship between these information processing styles with various heuristics and different vignettes of each heuristic. We build hypotheses based on the general heuristics literature, but we link traits related to rational and intuitive information processing to a comprehensive set of heuristics. Not many papers take this angle. Mahoney, Buboltz, Levin, Doverspike and Svyantek (2011) is one of few combining these insights. However, they focus on framing heuristics. Shiloh, Salton and Sharabi (2002) also link information processing styles to heuristics. They focus on heuristics that deviate from normative chances in probability assessments and the framing heuristic as well. We take a more comprehensive approach in examining this relationship, focusing on the three most popular heuristics in the literature. In line with Epstein, Pacini, Denes-Raj and Heier (1996) and Shiloh, Salton and Sharabi (2002) we look at the

possibility of the existence of a potential interaction effect between the two information processing styles as well.

We find a negative relationship between rational information processing and certain heuristics. Results on intuitive information processing, by contrast, are less clear, indicating a more complex relationship between intuitive information processing and heuristics. We reflect on types and characteristics of heuristics to shed some light on this relationship. We also find a significant interaction effect between intuitive and rational information processing for certain heuristics suggesting that the two information processing styles interact, thus confirming the complementarity of rational and intuitive information processing. So far Epstein, Pacini, Denes-Raj and Heier (1996) and Shiloh, Salton and Sharabi (2002) are the only two studies that tested this interaction effect, as far as we are aware of. In both of them, no significant interaction effect was found.

We follow well-established research on Cognitive-Experiential Self-Theory (CEST), which builds on the two qualitatively different systems of rational and intuitive information processing (Chaiken & Trope, 1999; Epstein, 1994, 2003; Pacini & Epstein, 1999): “CEST [...] views heuristics as resulting from the operation of a self-contained system, the experiential system, that differs in its rules of inference from another system, the rational system” (Epstein, Lipson, Holstein, & Huh, 1992, p.338). Building on Cognitive-Experiential Self-Theory (Epstein et al., 1992), we show the differential effect of rational and intuitive information processing on certain heuristics. Our study further illustrates that just testing one or a couple of heuristics and drawing conclusions on rational and intuitive information processing in general is not justified. Rather, there are differences between heuristics and differences among various vignettes of the same heuristic. We show evidence for this by studying the relationship between intuitive and

rational information processing with different heuristics. As a single heuristic can be measured in different ways, we rely on multiple vignettes in our study. We focus on the three most common heuristics and most popular vignettes to add to existing literature. We contribute to a better understanding of the effect of intuitive and rational information processing on different heuristics and different vignettes of each heuristic.

This article focuses on three heuristics that are used by decision-makers when they are asked to make a judgment under uncertainty and / or risk: 1. risky choice heuristic; 2. representative heuristic; and 3. the availability heuristic. These heuristics were selected from the immense list of heuristics based on their popularity in the literature and ease of measurement.

Theoretical background and three hypotheses

Rational processing

Until 1970, heuristics were viewed as an essential tool to aid people in decision-making. In the 1970's, the literature started to lean in the opposite direction: heuristics were viewed as flaws, biases, and barriers that restrained us from making good decisions (Goldstein & Gigerenzer, 2002). In the last thirty years, however, the tide seems to have turned again. Literature is again shifting towards recognizing the benefits of heuristics. Heuristics are necessary to filter data and reduce the complexity of a decision (Haley & Stumpf, 1989), particularly where it concerns decision-making situations in which we face environmental uncertainty and complexity.

The traditional view of human decision-making was that people make decisions in a rational way (Denes-Raj & Epstein, 1994) as a “logical analysis of games of chance rather than from a psychological analysis of risk and value” (Tversky & Kahneman, 1986, p.251). Therefore, most research on decision-making has been approached from a rational angle (Dane

& Pratt, 2007). This normative view regarding decision-making can be validated when taking into consideration that people are good at pursuing their personal goals when the right incentives are provided and appropriate opportunities are offered. In these situations, people should be able to formulate choice as a function that they try to maximize (Tversky & Kahneman, 1986).

In rational decision-making, we should observe a logical consistency across decisions, which is unaffected by framing of decision-making situations (De Martino, Kumaran, Seymour, & Dolan, 2006) and without the decision being made on the basis of prejudices (Dean & Sharfman, 1993; Noorderhaven, 1995). A rational actor can be described as demonstrating “a well-organized and stable system of preferences, and a skill in computation that enables him to calculate, for the alternative courses of action that are available to him, which of these will permit him to reach the highest attainable point of his preference scale” (Simon, 1955, p.99).

Making decisions analytically has been promoted by researchers (amongst others Janis & Mann, 1977; Keeney & Raiffa, 1976) as this is proven to be a less biased decision-making method (Dane, Rockmann, & Pratt, 2012) since the rational actor can identify the “trap” and will chose the optimal outcome. Some researchers have even made the claim that rationality is apparent in unbiased decisions (amongst others Curseu, 2006). Given the above arguments, we propose:

Hypothesis 1: Rational information processing is negatively associated with heuristics. Specifically, rational information processing is negatively associated with the risky choice heuristic, the representativeness heuristic, and the availability heuristic.

Intuitive processing

The literature distinguishes between two different styles of information processing, one roughly corresponding to rational thinking and one to intuitive thinking (Kahneman, 2003a). The rational system acts conscious and analytical. It is a “verbal reasoning system”, requiring an extensive use of cognitive resources (Epstein, 2008, p.24). The intuitive system is harder to understand. The term “intuitive information processing” seems to be an oxymoron, as intuition seems to imply something you do without processing information or thinking. This system, however, is a “non-verbal automatic learning system” (Epstein, 2008, p.24): it operates automatic and preconscious through “rapid, and holistic associations” (Dane & Pratt, 2007, p.40). The intuitive system has been positively associated with improvisation skills (Leybourne & Sadler-Smith, 2006), creativity (Raidl & Lubart, 2001), and innovation (Dayan & Elbanna, 2011). But in Western culture, intuition is mainly considered inaccurate, and individuals should not base decisions on it (Lieberman, 2000). Because of these characteristics, the intuitive system generalizes from one or a few cases, it represents events in the form of concrete, context-specific, holistic images, and it relates new information to activated schemas (Shiloh et al., 2002, p.417), creating an opportunity for biases. That is why intuition has been associated with a biased process (Slovic, 1972). Mahoney, Buboltz, Levin, Doverspike and Svyantek (2011) find, for example, that people who score high on intuitive information processing are more likely to have the framing heuristic. Given the above arguments, we expect that intuitive processing is positively associated with heuristics. Hence, we propose:

Hypothesis 2: Intuitive information processing is positively associated with heuristics.

Specifically, intuitive information processing is positively associated with risky choice heuristic, the representativeness heuristic, and the availability heuristic.

Interaction between rational and intuitive processing

Rational and intuitive information processing are carried out in two different parts of the brain (Simon, 1987). In line with CEST and the dual processing framework (amongst others Shafir & LeBoeuf, 2002), we argue that these are two different, complementary constructs. Sloman (2002) explains the interaction between the two systems as follow: “when a person is given a problem, both systems may try to solve it, each may compute a response, and the responses may not agree.” (Sloman, 1996, p.6). Kahneman and Frederick (2002) more precisely describe the interaction between intuition (System 1 in their terminology) and rationality (System 2) in the following way: “In the particular dual-process model we assume, System 1 quickly proposes intuitive answers to judgment problems as they arise, and System 2 monitors the quality of these proposals, which it may endorse, correct, or override” (Kahneman & Frederick, 2002, p.51). Kahneman (2003b) further emphasizes that errors of judgment imply errors of intuition (System 1) and rationality (System 2) because System1 generates the error and System 2 fails to detect and correct it (Kahneman, 2003b). There are a number of circumstances (e.g., time pressure, concurrent involvement in a different cognitive task, performing the task in the evening for morning people, and in the morning for evening people, and general mood) under which rationality is impaired. However, when no such conditions are present, the rational system is likely to overwrite the intuitive system (Kahneman, 2003b). Both systems work together.

As indicated before, Shiloh, Salton and Sharabi (2002) tested for the existence of an interaction effect between rational and information processing as well. They do this based on insights from two prior studies. The first is Epstein’s (1998) work, where he discussed the continuous interaction between the two systems. However, as Shiloh, Salton and Sharabi (2002) explain, he talks about a psychological interaction and not per se a statistical interaction. The

second insight is derived from Epstein, Pacini, Denes-Raj and Heier (1996), in which they empirically test the REI-40. In this paper, Epstein, Pacini, Denes-Raj and Heier (1996) include an interaction term between rational and intuitive information processing in explaining heuristic responses. However, they do not find a significant result. Based on these insights Shiloh, Salton and Sharabi (2002) conclude that it is relevant to study the interaction effect, but that theoretical reasoning regarding the direction of the effect cannot be substantiated yet.

Based on the insight regarding the individual effects of each system, we argue that if the participants score low on rational processing, they are likely to make a judgment solely on intuition and will probably use heuristics as a result (H1). In the same situation, if the participants score high on rational processing, it is more likely to overwrite the intuitive system. Therefore, we propose the following:

Hypothesis 3: Rational information processing weakens the positive relationship of intuitive information processing with the risky choice heuristics, the representativeness heuristic, and the availability heuristics respectively, or, intuitive information processing weakens the negative relationship between rational information processing and the risky choice heuristics, the representativeness heuristic, and the availability heuristic, respectively.

Method

Our study's sample consists of 179² third-year business undergraduate students at a Dutch university. Participants are mainly of Dutch nationality, although in total 20 different nationalities are present in the sample. Males are overrepresented (131 males vs. 50 females).

A survey combining different vignettes for the three main heuristics - availability heuristic, risky choice framing and representativeness heuristic - was administered to the participants in our study. In line with Levin et al.'s (2002) recommendation, we used a within-subject design for the heuristics studied here. Students were unfamiliar with the judgment and decision-making literature and the heuristics that we studied. The survey contains two different versions for the risky choice framing heuristic ("classic" Prospect theory and Asian disease problem), two different versions of the representativeness heuristic (two vignettes that differ in the context in which they are embedded), and two different versions of the availability heuristic (in words and visuals). In the following section, we explain the measures that we used in the survey.

Information processing styles were measured using the Rational-Experiential Inventory (Epstein et al., 1996; Pacini & Epstein, 1999). The REI-40 is a well-established, validated measure (Epstein et al., 1992; Epstein et al., 1996). The measure is rated on a 5-point-scale ranging from 1 ("definitely not true of myself") to 5 ("definitely true of myself") and consists of the four subscales of Rational Ability (e.g., "I have a logical mind"), Rational Engagement (e.g., "I enjoy intellectual challenges"), Experiential Ability (e.g., "I believe in trusting my hunches"), and Experiential Engagement (e.g., "I like to rely on my experiential impressions"). The REI-40

² One respondent was removed from the original sample as most questions were left blank, leaving us with a sample of 179 respondents.

has several advantages over other measures of rational and intuitive information processing. For instance, the REI-40 consists of two unipolar scales: a measure for rational information processing based on the NCF scale (Cacioppo & Petty, 1982) and the other measure is experiential thinking (Epstein et al., 1996). The REI-40 was specifically developed to focus exclusively on measuring the rational and intuitive-experiential information processing styles. Furthermore, the REI-40 is highly reliable (Pacini & Epstein, 1999). The REI scale consists of 40 questions, of which 19 were reverse coded to reduce the problem of inattention and acquiescence of respondents.

In our dataset, rational processing has a Cronbach's alpha of 0.800 and intuitive processing of 0.862, which are both well above 0.7, which is a common used rule of thumb. Question 21 (with a score of 0.249), 23 (with a score of 0.251), 35 (with a score of 0.237), 29 (with a score of 0.261), and 33 (with a score of 0.227) of the variable rational processing score below the 0.3 threshold for the corrected item-total correlation. However, removing any one of these questions does not improve the Cronbach's alpha. For the intuitive processing scale, questions 22 (with a score of 0.143) and 34 (with a score of 0.253) are the only two scores below the threshold. Removing question 22 would increase the Cronbach's alpha slightly with 0.04. A factor analyses for rational processing indicates that the items load on two factors explaining 32.3 per cent of the variance. With a forced two-factor analysis, we see the division of rational processing into the subscales Rational Ability and Rational Engagement. For intuitive processing, a factor analyses reveals that the first two components explain 36.8 per cent of the variance. The identification of the two sub-dimensions is less obvious. As REI-40 is a well-established measure and since we have a Cronbach's alpha in both cases above 0.7 (even above 0.8), we did not remove any of the items of the two scales.

To increase the robustness of our results regarding the three selected heuristics, we included two vignettes for each one of the three heuristics: risky choice framing heuristic, the representativeness heuristic, and availability heuristic. When selecting appropriate measures to include in our research, we started off by evaluating existing measures based on popularity. To ensure comparability with existing research, we included commonly used vignettes. We selected for each heuristic two out of all pre-selected measures increasing the reliability of the heuristic. We believe that this was also necessary because the measurements are numerous and rather diverse, while results are generally discussed in the literature as if all heuristics were measured in the same way.

Risky choice heuristic. We included two versions of the risky choice framing heuristic (Kahneman & Tversky, 1979). First, we measured risky choice based on classical gambling (win/loss) vignette (Kahneman & Tversky, 1984: problem 4). In line with Kahneman and Tversky (1984), we expected a large number of participants to favor a certain gain over an uncertain gain. In the specific vignette that we used, the certain option (\$240) resulted in a lower gain than the uncertain option (25% chance to gain \$1000 and 75% chance to gain nothing). Therefore, the probability-based option (of a calculated total of \$250) is clearly superior to the certain option (\$240). The second vignette we selected is the Asian disease vignette (Tversky & Kahneman, 1981). This vignette is seen as the classic way to measure the framing effect (Almashat, Ayotte, Edelstein, & Margrett, 2008). This vignette comes up with two identical choice situations, although framed in another way (one stressing the survival rates, and the other one stressing the death rates). Rationally operating respondents should be indifferent between the two options.

Availability heuristic. The availability heuristic is defined as “illusory correlations” (Tversky & Kahneman, 1973, p.223). We measured the availability heuristic in two different ways: in words (three different vignettes) and visually. In the visual measurement, we follow Tversky and Kahneman (1973). The availability heuristic in words was measured according to Slovic, Fischhoff, and Lichtenstein (1980). This measure consists of statistical statements of causes of death in the US. The three vignettes in words are based on the assumption that people underestimate the cause of death of unspectacular causes and, in contrast, overestimate the cause of death of spectacular causes because they received more media coverage. The assumption is that participants will overvalue death causes that are more available. Our test for visual availability consisted of selecting between two structures (A and B) that a respondent might relate to more or less paths. In fact, both structures contain an equal number of paths. Therefore, without any availability bias, we should find a distribution of 50 and 50 between the two structures.

Representativeness heuristic. The representativeness heuristic (Barnes Jr, 1984; Busenitz & Barney, 1997; Pitz & Sachs, 1984) was measured based on two different vignettes as proposed by Busenitz and Barney (1997). Those authors followed Fong, Krantz and Nisbett (1986) and Fong and Nisbett (1991) by giving short scenarios representing real-life decision-making to their participants. In both vignettes, one alternative is based on a large-scale study and one based on a very small sample or personal opinion. We expect that rational information processors are more likely to prefer the statistical study while intuitive information processors tend to prefer other sources or non-representative advice.

In our analyses we include gender as a control variable as systematic variation by gender might be expected (Epstein et al., 1996). We did not include other control variables as the variation regarding age and educational level was extremely low.

Results

The descriptive statistics and correlations of our sample are presented in Table 2.1 and 2.2.

Table 2.1: Descriptives

	N	Minimum	Maximum	Mean	Std. Deviation
Gender	179	0	1	0.7318	0.4442
Representativeness 1	179	0	1	0.1285	0.3356
Representativeness 2	172	0	1	0.5174	0.5012
Availability words	170	0	1	0.2588	0.4393
Availability visual	171	0	1	0.6725	0.4707
Framing Asian disease	171	0	1	0.4386	0.4977
Risky choice prospect theory	179	0	1	0.6760	0.4693
Rational information processing	179	2.55	4.85	3.7220	0.4289
Intuitive information processing	179	2	4.9	3.4416	0.4898

Table 2.2: Correlations

	1	2	3	4	5	6	7	8	9
1 Gender	1								
2 Representativeness 1	-0.140	1							
3 Representativeness 2	-0.174 *	0.054	1						
4 Availability words	0.071	-0.220 **	0.033	1					
5 Availability visual	-0.120	-0.055	-0.208 **	-0.073	1				
6 Framing Asian disease	-0.090	-0.021	0.005	-0.008	0.162 *	1			
7 Prospect theory Rational information	-0.108	0.126	-0.181 *	-0.017	0.038	0.036	1		
8 processing Intuitive information	0.108	-0.283 **	0.130	0.082	-0.076	-0.167 *	-0.097	1	
9 processing	-0.054	0.099	0.079	0.076	0.145	0.106	0.018	-0.155 *	1

p* < 0.05, p** < 0.01

The mean values for rational and intuitive information processing in our sample are comparable with other studies: Rational processing has a mean of 3.7, a minimum of 2.55 and a maximum of 4.85. Intuitive processing has a mean of 3.44, a minimum of 2.00 and a maximum of 4.90 in our sample. The correlation between rational and intuitive information processing is -0.155. We do not find any correlations above 0.3. We tested for multicollinearity by calculating the variance inflation factor (VIF). All variables have a VIF below 10, which is used as a rule of thumb. The first vignette of the representativeness heuristic has the highest VIF, which is 1.24.

We tested our hypotheses using a logistic regression as our dependent variable is binary (use of heuristic or not). We use Huber-White's robust standard errors adjusting for potential heteroscedasticity. In the following, we discuss our results. The results are displayed in Table 2.3. Findings that were not expected are discussed in the conclusion.

Table 2.3: Regression analyses

variables	Prospect bias		Framing: Asian disease		Representativeness 1		Representativeness 2		Availability Words		Availability Visual	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	H1 / H2	H3	H1 / H2	H3	H1 / H2	H3	H1 / H2	H3	H1 / H2	H3	H1 / H2	H3
(Constant)	2.676 (2.022)	-4.200 (10.106)	1.374 (1.938)	9.967 (9.666)	5.592 (3.008)	-17.881 (11.370)	-3.518* (1.869)	4.071 (9.014)	-4.574** (2.191)	8.002 (10.474)	0.084 (2.123)	-1.194 (9.384)
Gender	-0.589 (0.394)	-0.563 (0.393)	-0.379 (0.355)	-0.414 (0.359)	-0.749* (0.499)	-0.724 (0.503)	-0.856** (0.379)	-0.888** (0.383)	0.330 (0.430)	0.279 (0.432)	-0.549 (0.408)	-0.543 (0.412)
Rational	-0.429 (0.386)	1.298 (2.511)	-0.743** (0.375)	-2.966 (2.484)	-2.366*** (0.690)	4.178 (3.044)	0.790** (0.372)	-1.167 (2.283)	0.461 (0.380)	-2.707 (2.554)	-0.270 (0.426)	0.057 (2.379)
Intuitive	0.032 (0.330)	2.003 (2.871)	0.408 (0.340)	-2.004 (2.706)	0.413 (0.622)	7.216 (3.368)	0.374 (0.322)	-1.798 (2.507)	0.447 (0.394)	-3.106 (2.921)	0.598* (0.335)	0.964 (2.600)
Moderator intuition		-0.497 (0.714)		0.626 (0.698)		-1.904** (0.921)		0.563 (0.639)		0.898 (0.712)		-0.094 (0.665)
Log	-110.671	-110.395	-113.463	-113.083	-59.028	-57.951	-114.117	-113.820	-95.622	-94.934	-105.111	-105.103
Pseudo R2	0.018	0.021	0.032	0.035	0.140	0.156	0.042	0.045	0.016	0.023	0.028	0.028

*p<0.1, **p<0.05, ***p<0.01

Rational and intuitive processing

Risky choice framing

The pattern where decision-makers prefer the certain option over the probability-framed option for the gain framing and the probability-framed option over the certain option for the loss framing, represents decision-making in line with prospect theory. Such decision-making was then recoded as 1; all other patterns are coded as 0. The percentage of participants who are subject to the risky choice framing heuristic (prospect theory) is 32.7%. This is similar to other studies (e.g., Frisch (1993): 29% of participants showed a risky choice framing effect). In the gain conditions of prospect theory, there is a clearly inferior option i.e., the certain option is \$240 versus a probability of 75% of \$1000. One could think that participants who are high on rational information processing clearly eliminate this inferior option. However, we could not find significant evidence for this.

The percentage of participants who are subject to the risky choice framing heuristic based on the Asian disease vignette in our study is 43%. In other words, 43% of our participants prefer the probability framing in the loss situation and the certain option in the gain condition. This is substantially more than for the risky choice framing of the classical gain loss situation. In Tversky and Kahneman's study (1981), 72% of respondents chose 1/3 probability of saving everyone with the other option being 2/3 probability of saving nobody (Smith & Levin, 1996).

Regressions show that rational processing is negatively related to the Asian disease risky choice framing heuristic (Table 2.3, model 3). Therefore, subjects scoring higher on rational information processing are less susceptible to the Asian disease framing heuristic. It is noteworthy to mention that other researchers (amongst others Shiloh et al., 2002) did not find a significant relationship for risky choice framing in the Asian disease problem. However, we did

not find such a relationship for the risky choice framing with the classical gain loss situation (prospect theory). This indicates that it is very important which vignette is used. We cannot detect any significant relationship between intuitive processing and either vignette of the framing heuristic.

Representativeness heuristic

Our results show that rational processing is significantly related to the two vignettes of the representativeness heuristic, but in opposite direction (Table 2.3, models 5 and 7). For the first vignette, we find a negative relationship³ (in line with expectations); but for the second vignette, we have a positive relationship. It should be noted that other studies that investigated this relationship (for example, Sánchez, Fernández-Berrocal, Alonso, & Tuma, 2013), did not find evidence for a relationship between the representativeness heuristic and rational information processing. While the table indicates a significant relationship between representativeness and rational information processing in both vignettes, we do not find a significant relationship between either one of the representativeness heuristics and intuitive processing.

Availability heuristic

As mentioned previously, without any availability bias, we should find a distribution of 50 and 50 between the two structures. In our study, 69.8% of the participants were subject to availability heuristic in the visual format. While this number is lower than in Tversky and Kahneman's study (1973) (85% preferred structure A over structure B), the use of the availability heuristic in our sample is prominent.

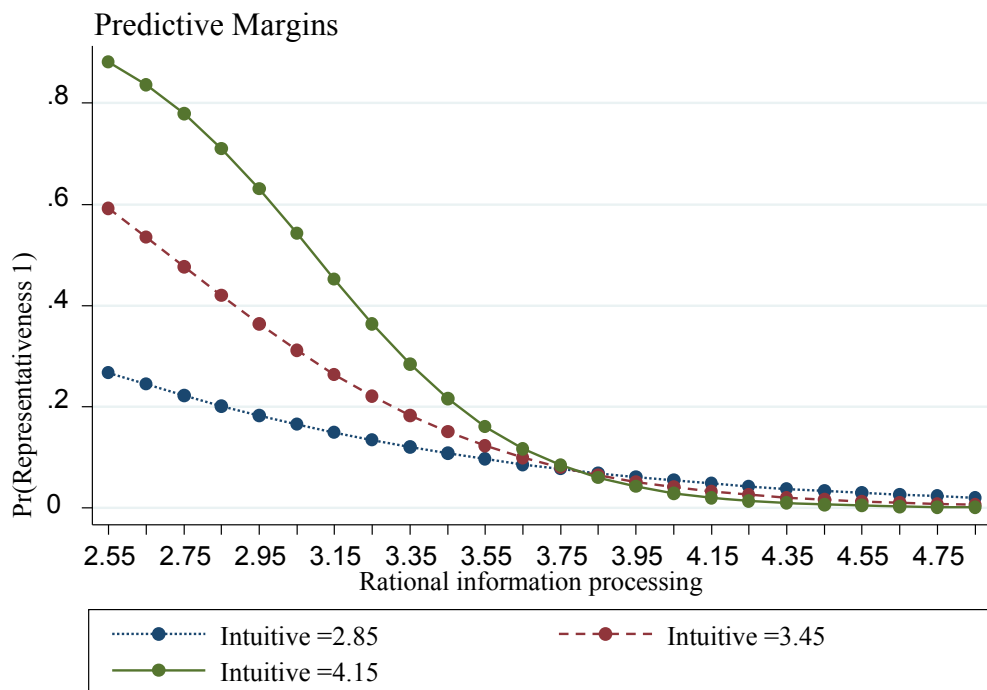
³ This vignette has a much higher pseudo R2 compared to all other vignettes.

The results suggest that there is no significant relationship between rational processing and the visual vignette of availability. We do, however, detect a significant negative relationship between intuitive processing and the visual vignette of the availability heuristic (Table 2.3, model 11).

Interaction rational and intuitive processing

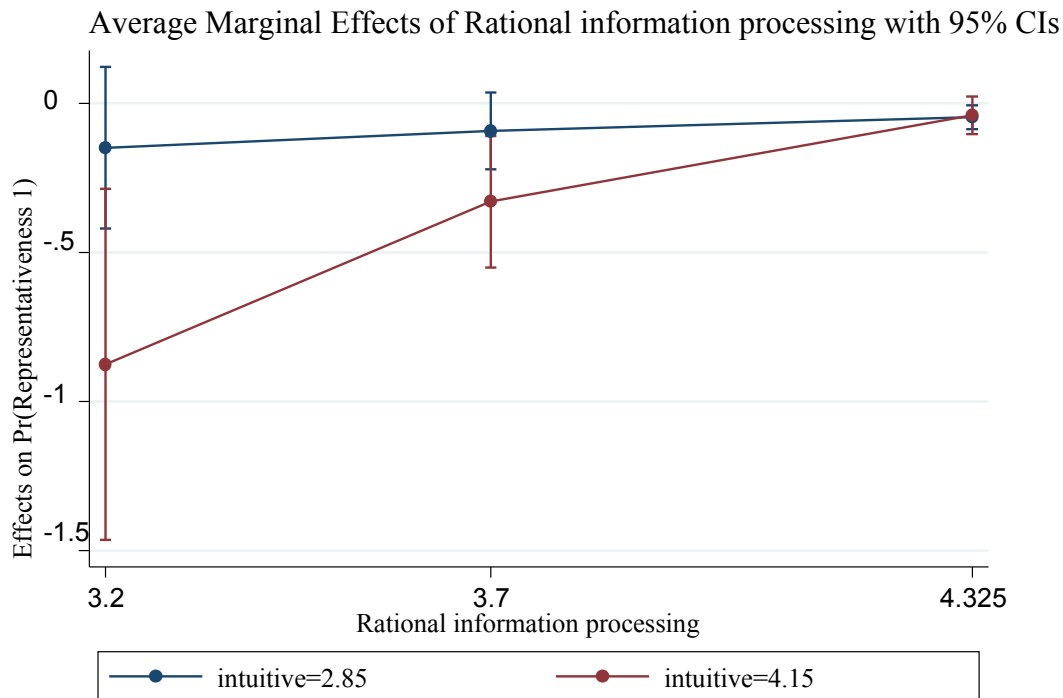
We find a significant interaction effect with the first representativeness heuristic vignette (Table 2.3, model 6). To interpret the interactions correctly we plotted all of them, graphed their marginal effects and calculated their significance. The graphs of the insignificant effects are added in Appendix 2.2. The interaction between rational and intuitive information processing on the first representativeness bias is plotted in Figure 2.1.

Figure 2.1: Interaction effect



The above graph shows how higher levels of intuitive processing strengthen the negative effect of rational processing. As we run a logit model, we corrected this model for marginal effect (Figure 2.2).

Figure 2.2: The marginal effect of rational information processing



At medium to very high levels of rational processing, intuitive processing does not strengthen the negative effect in the representativeness heuristic any more. We ran three alternative tests to verify this. Our analyses show that at low levels of rational processing the interaction effect is significant. It loses its significance at medium levels and at high levels it is clearly insignificant,⁴ therefore we can conclude that we do not find support for our hypothesis, but we do find a very interesting result namely, that intuitive processing seems to strengthen the negative effect of rational processing in the representativeness heuristic for lower levels of rational processing. We

⁴

Low:	Prob > chi2 =	0.0253
Median:	Prob > chi2 =	0.1151
High:	Prob > chi2 =	0.8589

find some evidence that people who make use of both intuitive as well as rational information processing can avoid the representativeness trap better. This actually supports literature that stresses how we need both intuitive and rational information processing, implying that they interact.

The interaction effect of rational and intuitive information processing was tested previously (Epstein et al., 1996; Shiloh et al., 2002). However, earlier work did not find an interaction effect. Shiloh et al. (2002), however, found a significant three-way interaction between intuitive information processing, rational information processing, and framing (more non-risky choices under positive compared to negative framing). Shiloh et al. (2002) found this effect for two out of four groups: high-rational/high-intuitive and low-rational/low-intuitive. Shiloh and colleagues were cautious about the three-way interaction effect that they found in their study as it was unstable and unanticipated. Therefore, they suggested further investigating this effect. Björklund and Bäckström (2008) also tested the interaction effect between intuitive and rational processing, but found it to be negligible.

Our results show that although intuitive information processing in general can be positively associated with some heuristics, combined with rational information processing, it can actually strengthen the negative effect of rational information processing on biases. The graphs show that this is valid for people who have low levels of rational processing. They largely benefit from intuitive processing in decision-making. For people who score high on rational information processing, this effect does not occur. Although we cannot conclude that high rational information processors do not use or need the intuitive processing system to the extent other people do, we do believe this is worth further investigation. In general, it is believed that

System 2, the rational system, overrides System 1, the intuitive system, when necessary, but how the two systems work at the same time as suggested by our results remains unclear.

Robustness Checks

Although the literature tends to generalize the relationship between rational processing/intuitive processing from specific heuristics to all heuristics, our mixed results indicate caution is warranted. In line with Shiloh et al. (2002), we emphasize the diversity of each heuristic by reporting that information processing styles relate differently to availability and representativeness heuristics than to framing effects in risky choices. These relationships vary in significance and strength. The strongest relationship between information processing and heuristics we find for the representativeness heuristic, but the results are mixed there. To gain a better understanding of the differences between the various heuristics, we study the underlying characteristics of heuristics and or vignettes that likely influence the decision-making of the subjects. We find mixed results regarding our risky choice heuristic and availability heuristic, and a large distinction between the two vignettes on representativeness, which we will address here.

The Asian disease vignette and the classical prospect theory vignette both are framing vignettes. However, the two differ in one important aspect. The decision in the Asian disease vignette has potentially much more severe consequences than the decision in the prospect theory vignette. In the Asian disease vignette, the decision-maker decides about life and death; in the classical prospect theory vignette, the decision-maker decides about gambling options. This might explain why we have found a negative significant relationship between rational processing and the Asian disease vignette and no relationship between rational processing and the classical prospect theory vignette.

In the Asian disease and the prospect theory vignettes, participants are asked to answer to a question that is related to a disease and a gambling choice, respectively, by choosing between two options: a certain one and one based on probability. One could assume that decision-makers who score high on rational information processing have a general preference for the option containing a probability statement as this could resonate more with a precise, probability-based way of viewing the world. This would imply that participants who are high on rational information processing might prefer the probability-based option independent of the framing condition they are in. This would result in rational information processors overwhelmingly preferring the probability-based option (“75 per cent chance of losing \$1000, and 25 per cent chance of losing nothing”) over the certain option (“A sure loss of \$750”). Such an effect could obscure our results for the relationship between rational information processing and the prospect theory framing vignette. Therefore, we examined whether such a general preference for probability-based options is present in our sample by relating rational information processing with the probability-based options. However, our data did not show any evidence that this is the case.

For the availability heuristic, we found a weakly significant relationship with intuitive information processing and the visual form of the heuristic, but we did not find any significant relationship for the availability heuristic in words. There are of course different vignettes for the availability heuristic (such as Schwarz et al., 1991) that we could have considered. However, it is noteworthy that the effect for visual availability was significant. It seems that visual availability may be interpreted as an automatic mechanism, while intuitive information processors may jump to conclusions more quickly than rational decision-makers. The rational system that normally

overwrites the intuitive system when an error is detected might fail to do so, as it is not easy to calculate the outcome.

When testing the representativeness heuristic, we find significant but opposing results for both vignettes. Previous studies use both vignettes to measure the representativeness heuristic. This makes sense as in both vignettes one option represents a choice based on a large statistical sample and another one on one opinion. However, if we take a closer look at the two different vignettes, the formulations in both vignettes differ quite substantially. In the first vignette, two clear separate options are given; but in the second vignette, the personal opinion's argumentation can potentially refute the study as represented by option one. The argumentation is very much in line with critical reflections given on studies. We tested our hypothesis amongst university students who are familiar with potential biases in research. We believe that the deviation found in results between the two vignettes can potentially be explained by our sample. Their critical academic background, and the fact that they are daily exposed in the university courses they take to this line of argumentation, might be the reason why we find opposing results that have not been found in other research, as far as we are aware of. We checked whether respondents who are prone to the availability heuristic are more or less prone to the representativeness heuristic (the second vignette), but we did not find any significant results. This however does not refute the proposed explanation.

To check the robustness of our results, we subdivided the REI-40 variable into the four sub-dimensions as proposed by Pacini and Epstein (1999), and re-ran all analyses. For representativeness 1, the subscale experiential ability (EA) and rational ability (RA) are both significant (experiential ability with 0.6342 with a significance level of 0.037 and rational ability with -1.1543 with a significance level of 0.001). For representativeness 2, these two sub-

dimensions were insignificant. However, rational engagement (RE) is significant (with 0.4982 at a significance level of 0.029). These results seem to again stress how different the two representativeness measures are (at least in our study). For the visual availability heuristic we do not find significant results. For the availability heuristic, expressed in words we find that Rational Ability (RA) is not significant, with a p-level of 0.142 (0.3654). Our risky choice prospect analyses also give no significant results. The Asian disease framing heuristic, however, shows a negative relationship with Rational Engagement of -0.4991 (at a significance level of 0.023).

As we do not have many control variables, we also tried the inclusion of the dummy control variable nationality, in which 1 is Dutch and 0 is another nationality. This, however, did not show any significance in any of the models (as expected). We also re-ran our regressions including the removed respondent who did not fill out the entire questionnaire. This did not lead to any other results.

Discussion

Contributions and implications

We analyzed the relationship between rational and intuitive information processing and various heuristics. We found that rational information processing is negatively associated with one vignette of the representativeness heuristic and positively with another vignette. Our results further show that rational information processing is negatively related to the Asian disease vignette of risky choice framing. However, rational information processing was not related to the availability heuristic.

Intuitive processing, by contrast, was significantly related to the availability heuristic (visual version). This is likely due to the fact that the visual variant caters more to the automatic and spontaneous system overall. It is not that obvious how the respondent could calculate how many paths the two drawings might entail. Therefore, there is a greater fit with intuitive processing: the respondents who score higher on intuitive processing are tempted to provide an immediate automatic answer.

We identified an interaction effect of rational and intuitive information processing for the representativeness heuristic. This is interesting because other studies, such as Epstein et al. (1996) and Shiloh et al. (2002), fail to identify such an interaction effect. Epstein et al. (1996) focusses on heuristic behavior and not specific heuristics, as we did. This might explain why they did not find an significant interaction effect. Shiloh et al. (2002), however, do focus on heuristics that they classify as availability or representativeness. For both types of heuristics, they do not find a significant interacting effect. Comparable to our study, their sample also consists of students. However, out of 128 respondents, they have 111 women. We checked if the gender effect might be the reason why we find an interaction effect and they do not. Our subgroup analysis, however, shows that in the sample of women the negative interaction effect on representativeness is stronger than for man, contradicting our explanation. By excluding this plausible explanation, the main explanation potentially lies in the measurement of representativeness. The measurement of representativeness used in their study does capture the main idea behind representativeness as well, but it is rather crude compared to the rich, specific vignette used in our study. This crude measurement might have captured potential noise, possibly explaining why they did not find an interaction effect.

Our found interaction effect seems to reflect a simultaneous influence of intuitive and rational information processing in decision-making, as suggested by Woicehyn (2009). Woicehyn (2009, p.312) found that “the two [rational and intuitive information processing] interact constantly in a process labelled integration by essentials – as opposed to intuition being used only sometimes, as suggested by much of the previous research.”

In general, our study shows that rational processing is mostly negatively related to heuristics and intuitive processing mostly positively. We find most interesting results, including a significant interaction effect, when examining the representativeness heuristic. In other papers testing rational and intuitive information processing against heuristics (amongst others Mahoney et al., 2011; Sánchez et al., 2013), the representativeness heuristic does not particularly stand out, or is insignificant. To gain a greater understanding, we hope that future research will investigate the representativeness heuristic in more detail. We suggest the inclusion of multiple vignettes in research. Research in all areas, and therefore also in ours, is highly criticized for using student sampling. Although we believe argumentation dismissing student sampling is often flawed, we see great value in repeating the study using a sample with more variance. For the representativeness heuristic we would propose a study including the president versus the director vignette of the representativeness heuristic among different university or post-graduate students, as we believe that the deviation in outcomes between the two representativeness vignettes might be attributed to the sample we have selected.

It would also be interesting to see whether there are vignettes of the availability heuristic that are significantly related to rational and intuitive information processing, as the ones we included were not.

We contribute to the literature on CEST measuring intuitive and rational information processing based on the REI-40. Our comprehensive test shows that rational and intuitive information processing are related to specific heuristics and different versions of certain heuristics. Our study confirms the speculation by Sánchez et al. (2013) that REI may contain certain dimensions that relate better to certain heuristics, or in our case, certain vignettes. Our study points to the need for a more systematic study of heuristics and their vignettes for a fuller understanding of this issue. In this paper we have tried to distill some reasons why the vignettes behave so differently. One possibility is that the core values in a vignette moderates the strength of a heuristic response. In the risky choice vignettes, for example, we believe that emotional distress or severity of the vignette may impact a heuristic response. We believe this would be an interesting follow up study, as it will give new insights into the heuristics as well as information processing literature.

Limitations and future research

We did not include a measure to determine the risk attitude of the respondents. We regard this as a potential weakness in our study, as it might provide an alternative explanation for our results, because we cannot correct for a possible general risk taking attitude when analyzing the risky choice heuristics.

For convenience reasons, we test our hypotheses in a sample of undergraduate students. As our research focuses on “fundamental processes, structures and outcomes” - which are focused on “the basic characteristics of human nature that are relatively independent of context and life experiences” - experiments with student samples are a valid way to collect data (Bello, Leung, Radebaugh, Tung, & van Witteloostuijn, 2009, p.362). It has been shown that undergraduates have similar heuristics and biases, and have a similar sensitivity to framing

effects to non-students (Kühberger, 1998). Hence, student samples are an accepted in studies of heuristics and information processing.

When measuring the availability heuristic we use one visual vignette. We followed Tversky and Kahneman (1973) where respondents have to pick between two visual representations. In line with Tversky and Kahneman (1973), we did not offer them the possibility of giving the answer “same amounts of paths”. People who see that both structures offer an equal amount of paths are forced to pick one over another; therefore, they might be marked as having the bias although they do not.

We hope that more studies will examine the interaction effect between rational and intuitive information processing and, beyond that, the underlying mechanism. In contrast to what we expected, we found a negative interaction effect between rational and intuitive processing. Therefore, we had to reject our formulated hypotheses, but the results can be explained. It is believed that rational processing and intuitive processing work together not just by balancing, but also by strengthening on another. In that sense, the premise on which we based our hypothesis remains intact.

Appendix 2.1 Survey questions

Measure risky choice heuristic (classic)

Question 1 in survey:

If you were faced with the following choice, which alternative would you choose? Please circle the alternative that you would choose.

A sure gain of \$240

B 25 per cent chance to gain \$1000, and 75 per cent chance to gain nothing.

- ☐ A
- ☐ B

Question 2 in survey:

If you were faced with the following choice, which alternative would you choose?

A sure loss of \$750

B 75 per cent change to lose \$1000, and 25 per cent chance to lose nothing.

- ☐ A
- ☐ B

Measure risky choice heuristic (Asian disease)

Question 1 in survey:

Imagine that the Netherlands is preparing for the outbreak of an unusual disease, which is expected to kill 600 people. Two alternative programs to combat the disease have been proposed. Assume that the exact scientific estimates of the consequences of the programs are as follows.

A: If Program A is adopted, 200 people will be saved.

B: If Program B is adopted, there is a 1/3 probability that 600 will be saved, and a 2/3 probability that no people will be saved.

Which of the two programs would you favor?

- ☐ Program A
- ☐ Program B

Question 2 in survey:

The US faces a war situation where 1000 soldiers could be killed. The commander-in-chief identified two possible ways to resolve the situation: strategy A or strategy B.

A: If the commander-in-chief chooses strategy A, 750 soldiers will die.

B: If the commander-in-chief chooses strategy B, there is a 1/4 probability that nobody will die and 3/4 probability that all soldiers will die.

Which solution would you advice?

- ☐ A
- ☐ B

Measure availability heuristic

Question 1 in survey:

Consider these pairs of causes of death.

For each pair, circle the one you think causes more deaths in the US each year.

- ☐ Lung cancer vs. Motor Vehicle Accidents
- ☐ Emphysema vs. Homicide
- ☐ Tuberculosis vs. Fire and Flames

Question 2 in survey:

Consider the two structures, A and B, which are displayed below.

Structure A:

```

X X X X X X X
X X X X X X X
X X X X X X X
  
```

Structure B:

```

X X
X X
X X
X X
X X
X X
X X
X X
X X
  
```

A path is a line that connects an X in the top row of a structure to an X in the bottom row by passing through one (and only one) X in each row. In other words, a path connects three X's in Structure A (one in each of the three rows) and nine X's in Structure B (one in each of the nine rows). One example is drawn in each structure above.

In which of the two structures do you expect more paths?

- ☐ A
- ☐ B

Measure representativeness heuristic

Question 1 in survey:

Mr. Johnson is about to invest in a new machine and has narrowed his options to Machine A, which is made in the Netherlands or Machine B, which is made overseas.

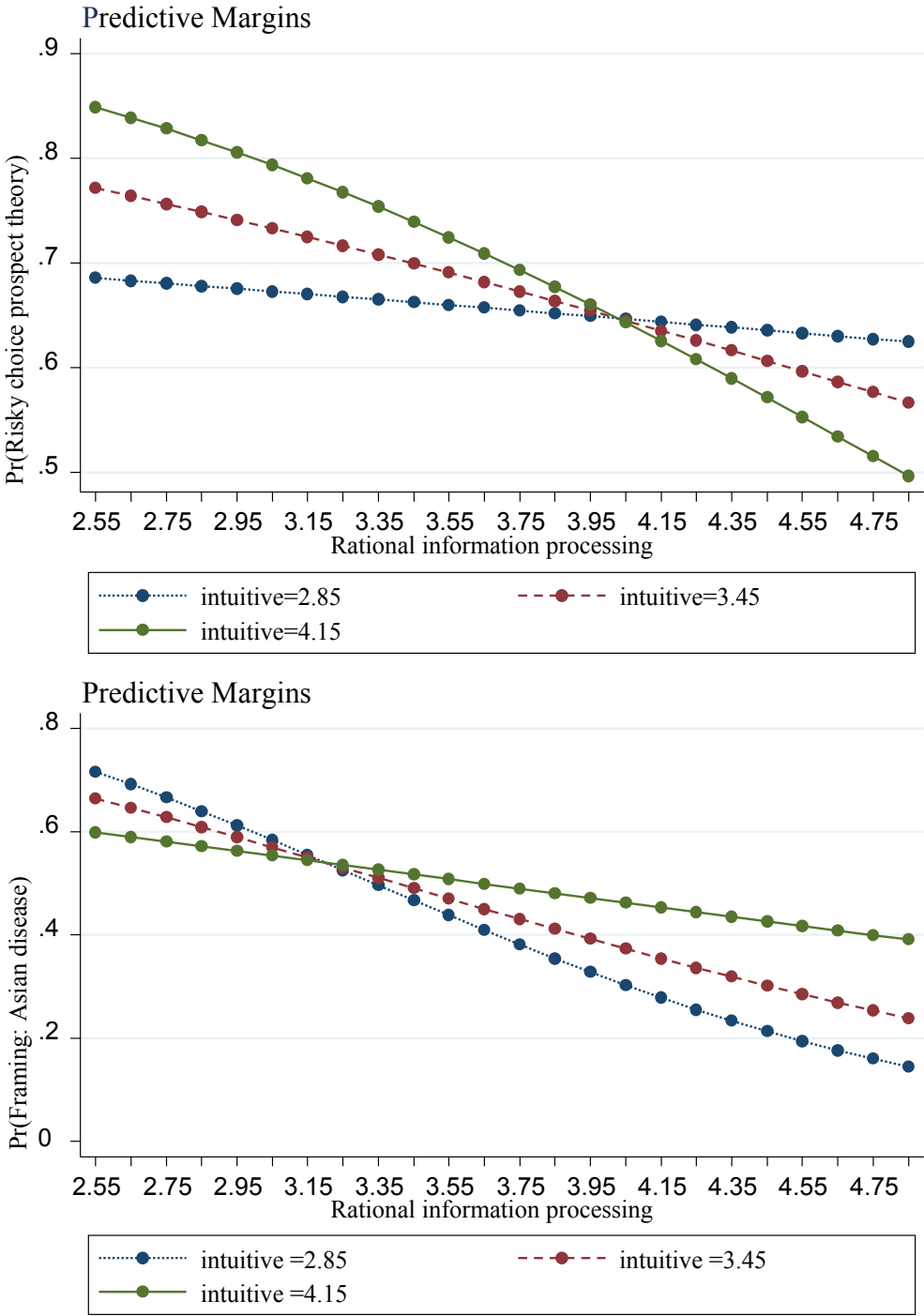
Both machines are equally capable of performing the same function. In considering this decision, Mr. Johnson said to his friend, "You know, it seems that every time I buy a piece of equipment made by a foreign manufacturer, it breaks down in the first month of use." After further discussion, Mr. Johnson's friend remembers a recent industrial report that gives a significantly higher ranking to Machine B (the one made overseas) than to Machine A. This report bases its recommendation on extensive testing as well as on feedback from dozens of users.

Which Machine would you purchase?

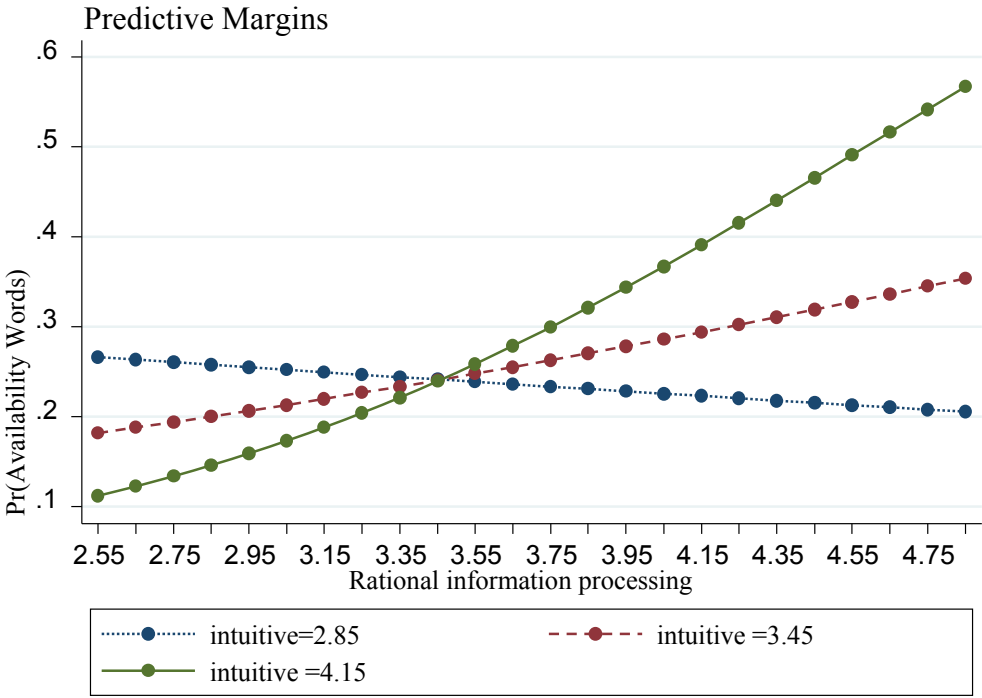
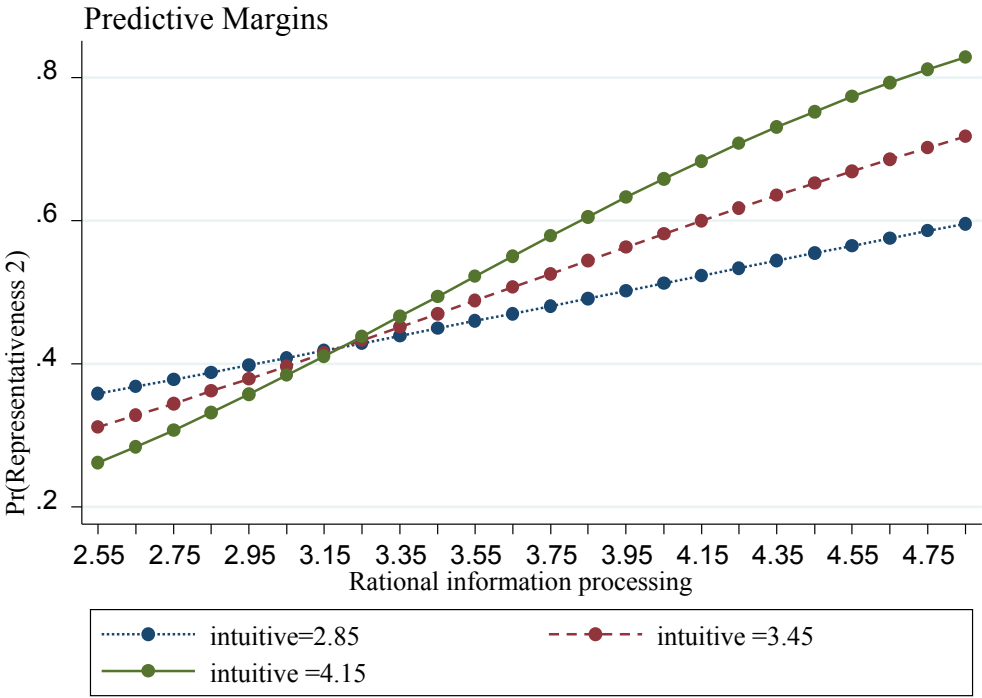
- ☐ Machine A
- ☐ Machine B

15. I am not a very analytical thinker.
16. When it comes to trusting people, I can usually rely on my gut feelings.
17. Reasoning things out carefully is not one of my strong points.
18. If I were to rely on my gut feelings, I would often make mistakes.
19. I prefer complex problems to simple problems.
20. I don't like situations in which I have to rely on intuition.
21. Thinking hard and for a long time about something gives me little satisfaction.
22. I think there are times when one should rely on one's intuition.
23. I don't reason well under pressure.
24. I think it is foolish to make important decisions based on feelings.
25. I am much better at figuring things out logically than most people.
26. I don't think it is a good idea to rely on one's intuition for important decisions.
27. I have a logical mind.
28. I generally don't depend on my feelings to help me make decisions.
29. I enjoy thinking in abstract terms.
30. I hardly ever go wrong when I listen to my deepest gut feelings to find an answer.
31. I have no problem thinking things through carefully.
32. I would not want to depend on anyone who described himself or herself as intuitive.
33. Using logic usually works well for me in figuring out problems in my life.
34. My snap judgments are probably not as good as most people's.
35. Knowing the answer without having to understand the reasoning behind it is good enough for me.
36. I tend to use my heart as a guide for my actions.
37. I usually have clear, explainable reasons for my decisions.
38. I can usually feel when a person is right or wrong, even if I can't explain how I know.
39. Learning new ways to think would be very appealing to me.
40. I suspect my intuition is inaccurate as often as it is accurate as often as it is accurate.

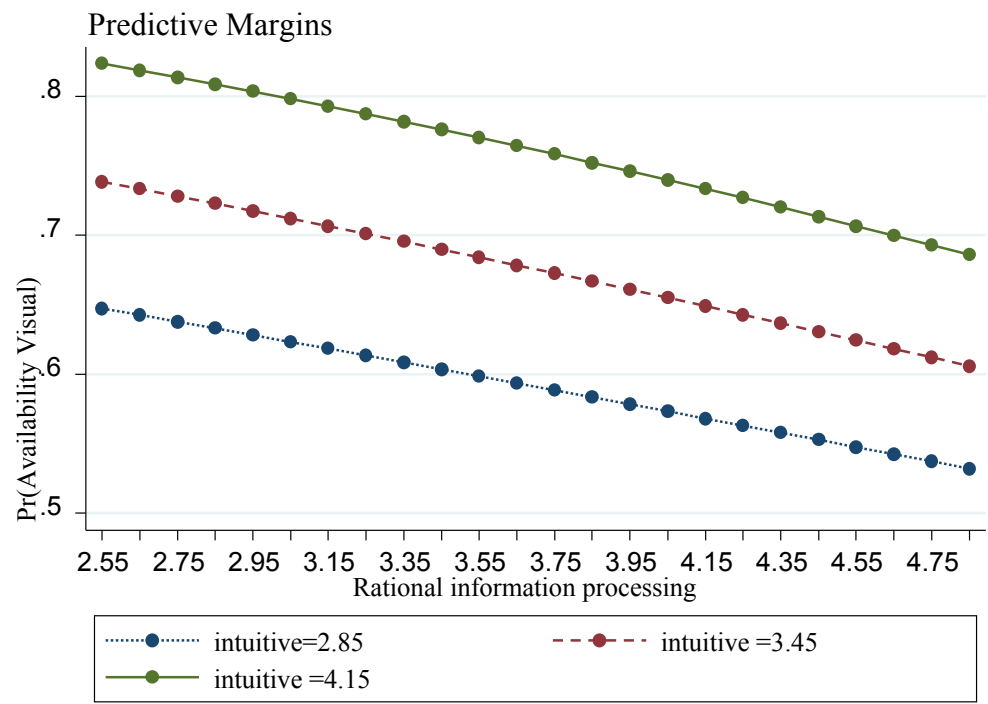
Appendix 2.2 The interaction graphs and marginal effects



5	Low:	Prob > chi2 =	0.4928
	Median:	Prob > chi2 =	0.4884
	High:	Prob > chi2 =	0.4874
6	Low:	Prob > chi2 =	0.3503
	Medium:	Prob > chi2 =	0.4008
	High:	Prob > chi2 =	0.4801



7	Low:	Prob > chi2 =	0.3389
	Medium:	Prob > chi2 =	0.3873
	High:	Prob > chi2 =	0.4681
8	Low:	Prob > chi2 =	0.1664
	Medium:	Prob > chi2 =	0.1587
	High:	Prob > chi2 =	0.1598



9

Low:	Prob > chi2 =	0.9733
Medium:	Prob > chi2 =	0.9575
High:	Prob > chi2 =	0.9403

Chapter 3

A safe bet or everything on red: The role of projection bias in voting¹⁰

Abstract

Literature on political ambiguity has highlighted risk lovers' preference for ambiguity. Recently, the role of projection biases is studied in influencing voters' evaluation of candidates with ambiguous strategies, independent of voters' risk attitude. Empirical studies find that party affiliation can encourage this bias. In order to isolate the impact of voters' projection biases from a party affiliation effect, we conducted an experiment in a multi-party competition setting with low party affiliation, considering issue-specific effects. Unlike earlier work, we do not rely on self-reported measures of risk attitude, which can be inaccurate and context-dependent. Rather, we elicit actual risk behavior. Empirics suggests that voters' biases influence their preferences for ambiguity irrespective of risk attitude. Moreover, we find tentative evidence for issue-specific effects.

¹⁰ This chapter is the result of joint work with Gilmar Zambrana-Cruz and Arjen van Witteloostuijn.

Keywords

Ambiguity in elections, projection bias, political science, the Netherlands, experiments

Highlights

- We take an empirical approach while examining projection bias in voting ambiguity, which is not often done so far in research.
- We find empirical evidence for the existence of projection bias while excluding preference for candidate's characteristics as well as party effects, providing new insights as to what projection bias actually is.
- In our analyses of voting ambiguity, we incorporated a more objective measure of risk attitude by incorporating a lottery game instead of relying on a self-reported measure of risk attitudes.
- Our results indicate the importance of issue-specific effects in understanding the (dis)preference for ambiguity.

Introduction

Political parties may well “becloud their policies in a fog of ambiguity” (Downs, 1957, p.136). Ambiguity can be explained partially by imprecise communication during electoral campaigns, and by voter apathy that prevents voters from knowing candidates’ policy positions accurately. However, it is broadly accepted that ambiguity is largely the result of political parties’ strategic decisions (Page, 1976,1978 in Callander & Wilson, 2008; Downs, 1957), and that ambiguity can be used as a winning strategy in partisan elections (Aragones & Postlewaite, 2002; Callander & Wilson, 2008; Jensen, 2009).

The study of ambiguity in elections has been stimulated by the decline of social-structural voting and the rise of issue competition in political systems. In old democracies, there used to be a durable pattern of political behavior across social groups and political parties (Bornschier, 2009). This meant that political parties were founded to represent the political stands of social groups – cleavages – in a society (Grumm, 1958; Lipset & Rokkan, 1967; Rose & Urwin, 1970). However, the strength of this relationship has declined not only in modern Western democracies, but also in other democracies around the world (Enyedi, 2008; Green-Pedersen, 2007). As a consequence, party membership has decreased (Berglund, Holmberg, Schmitt, & Thomassen, 2005; Enyedi, 2008; Green-Pedersen, 2007) and electoral volatility has increased (Green-Pedersen, 2007; Mair, 2002, 2008).

As a result, voting behavior is less related to the long-term relationship between social cleavages and political parties. Instead, it is more linked to specific political issues that change frequently (Enyedi, 2008; Green-Pedersen, 2007). Since structural voting has become less important, parties’ political platforms rely more on short-term issues they believe are capable of

attracting voters – i.e., political parties engage in issue competition (García-Díaz, Zambrana-Cruz, & Van Witteloostuijn, 2013; Green-Pedersen, 2007; Lowery et al., 2013), and focus less on party affiliation. Parties' political programs, including different issues that can change from one election to the other, may then have a degree of ambiguity that generates uncertainty for voters.

The study by Shepsle (1972) explains that voters' preference for ambiguity depends on voters' risk attitudes. Risk-averse voters reject ambiguity. Only risk-loving voters are willing to accept the higher uncertainty associated with ambiguous positions if that implies that better outcomes may be achieved. Similarly, Aragonès and Postlewaite (2002) claim that voters with intense preferences feel appealed to ambiguous platforms. Other scholars argue that candidates face a trade-off between increased uncertainty that alienates voters and reduces the probability of winning elections versus increased flexibility to achieve another political objective. For instance, politicians use ambiguity to (a) keep the flexibility to implement policies they care about when they are elected (Aragones & Neeman, 2000), (b) maintain their appeal to a sufficient number of voters when they are in office without being accused of deception (Alesina & Cukierman, 1990), and / or (c) obtain information about the preferences of the electorate during primaries to adjust the strategy for the general election accordingly (Meirowitz, 2005).

Unlike these prior contributions, we claim that ambiguous political platforms can be used as a political strategy to win elections independently of voters' risk attitude. This implies the assumption that ambiguous strategies can attract risk-averse voters as well. Callander and Wilson (2008) argue that voters prefer ambiguity when they face context-dependent voting, and Jensen (2009) focuses on the influence that projection effects have on voters' preference for ambiguity without the need to assume context-dependent voting. We develop a few testable hypotheses

taking insights from Callander and Wilson (2008) and Jensen (2009). We focus on the projection effect as the main reason for ambiguity preferences.

The projection effect occurs when voters change their perception of the candidate's policy attitude to make the candidate's position closer to their own policy attitude (Krosnick, 2002). Then, voters' perceptions can be biased. We refer to this as the projection bias. If the bias is positive (negative), then voters perceive that candidate as closer to (further away from) their ideal policy position even when evidence to suggest this is missing. Then, voters prefer (reject) ambiguous positions even if they are risk-averse (loving). As a consequence, a projection bias crowds out the risk attitude effect, implying that ambiguous candidates might have an advantage (disadvantage) when they compete for office dealing with voters with a positive (negative) bias for ambiguous platforms.

The empirical study of ambiguity is challenging. Ambiguity produces uncertainty, but the former is not the latter's only source. Empirical studies face the difficulty to distinguish uncertainty that is the result of ambiguity from other sources of uncertainty, implying a high likelihood of measurement noise (Tomz & Van Houweling, 2009). Another difficulty is the need to take into account that candidates may employ different degrees of ambiguity tolerance when addressing different audiences and / or dealing with different issues – e.g., by not giving much information to audiences that could react adversely to that information. This gives further endogeneity issues. Additionally, isolating the effect of ambiguity from other factors such as candidate's charisma, media exposure, race and experience (Tomz & Van Houweling, 2009) is anything but easy. Finally, to separate the effect of the projection bias from other processes that

affect voters' perception of political parties, such as policy based-evaluation and persuasion (Krosnick, 2002),¹¹ is not so straightforward.

By running an experiment that is carefully designed, we aim to effectively deal with these measurement and endogeneity issues, as well as to reduce the effect of policy-based evaluation and persuasion effects in order to focus on the influence of projection bias on voters' preferences for ambiguity. By doing so, we take a different, narrower perspective in analyzing projection bias so we can gain a better understanding of the concept.

Following Tomz and Houweling (2009), we conducted an experiment with 300 participants. We defined *ex ante* the positions of both the precise and the ambiguous candidates, and we exposed the participants to a predetermined degree of ambiguity. In this manner, we seek to avoid measurement and endogeneity issues. We tried to exclude the effect of party affiliation from our experiment not only in order to reduce policy-based evaluation and persuasion effects, but also to focus on other features that make ambiguity attractive or non-attractive to voters (e.g., flexibility or non-credibility of the candidates). To minimize the effect of party affiliation in voting behavior, we used anonymous political platforms (i.e., parties A and B). This we believe worked well, as we conducted our experiment in a setting with extensive multiparty competition¹² and low party affiliation (i.e., the Netherlands). This is different to Tomz and Houweling (2009), who conducted their experiment in the US, where there is bipartisan competition and high party affiliation.

¹¹ A policy-based evaluation effect occurs when the sentiment toward a candidate can be changed. "The sentiment can become more positive when agreement exists and sentiment can become more negative when disagreement exists" (Krosnick, 2002, p.118). Persuasion effect occurs "when a voter may come to adopt the policy attitude of a liked candidate or to reject the policy attitude of a disliked candidate" (Krosnick, 2002, p.118).

¹² Many democracies in the world comprise multi-party settings – e.g., Continental European and Latin American countries (Lowery et al., 2010).

Additionally, we evaluate three political issues that reflect as many important political issues for the Netherlands, namely immigration, the financial crisis and the role of European institutions. In this way, we can not only test the reliability of our findings in robustness analyses, but can also analyze the perhaps differential effect of specific political issues on voter's preference for ambiguity. Finally, another important contribution is that we improve the measurement of risk attitude by using a lottery game involving money prizes to measure actual risk behavior instead of using self-reported measures of risk attitude. Experimental studies that aim to measure risk behavior using real money, like ours, "offer an incentive-compatible measure of risk attitudes" (Dohmen et al., 2011, p.523). This is a response to the skepticism as to whether a self-reported risk attitude does capture real behavior (Camerer & Hogarth, 1999; Dohmen et al., 2011). We follow the studies by Duch (2010), and Eckel and Grossman (2002, 2008) by exposing the participants to a different pair of lotteries. Their choices give the degree of their risk-aversion/acceptance.

Theoretical background: Uncertainty, risk, bias and ambiguous strategies

Ambiguous candidates often make vague statements that increase voters' uncertainty about the policies they intend to pursue (Tomz & Van Houweling, 2009). Voters unwilling to accept this additional uncertainty do not vote for ambiguous candidates. For risk-averse voters, ambiguity decreases the candidate's appeal. As a consequence, ambiguous political parties cannot win (Shepsle, 1972), unless enough risk-loving voters, regarding critical political issues, are "willing to take a chance in order to obtain their most preferred alternative, even at some large risk of obtaining considerably worse alternatives, rather than to settle for a middling alternative" (Shepsle, 1972, p.565). However, the history of elections is full of examples of candidates

winning elections whilst using ambiguous strategies regarding key political issues (Bartels, 1988; Shepsle, 1972; Tomz & Van Houweling, 2009), despite the average voter not being a risk-lover. Indeed, only limited empirical evidence supports the claim that the average voter is risk-loving (Morgenstern & Zechmeister, 2001); rather, most empirical work suggests that voters are risk-averse (Alvarez, 1998; Bartels, 1986) or risk-neutral, at best (Berinsky & Lewis, 2007; Eguia, 2009).

The reasons why candidates prefer ambiguous platforms in elections, even when this reduces the likelihood of winning elections, have been discussed quite extensively in the literature. Aragonès and Neeman (2000) argue that parties that advocate ambiguous platforms have more flexibility in implementing policies when they are in office, without losing credibility or being accused of deception. Similarly, Alesina and Cukierman (1990) suggest that incumbents in office select a certain degree of ambiguity in order to maintain their appeal on a sufficient number of voters, exploiting the asymmetry of information regarding their true political position in order to prioritize their preferred policy position (ideology) versus the likelihood of re-election. Without ambiguity, the incumbent is locked into her or his ideological position because voters could see her or his real policy position. Meirowitz (2005) argues, based on US data, that parties use ambiguity in the primary election to obtain information about preferences of the electorate. An ambiguous platform offers political parties the opportunity to include the median voter's preferred option in the primaries that can be stressed later in the general election without any harm to their credibility.

Taking a different perspective, Aragonès and Postlewaite (2002), Callander and Wilson (2008) and Jensen (2009) explain why ambiguity can be applied as a winning strategy in elections. We follow this line of reasoning by arguing, too, that voters' preference for ambiguity

is not related to voters' risk attitude. Aragonès and Postlewaite (2002) claim that if the only objective of a candidate is to win elections, then ambiguity can be a winning strategy when voters with intense preferences (i.e., who care a lot about their preferred option) perceive that their most preferred policies have some chances to be implemented by the ambiguous candidate. Without denying the influence that intensity of preferences can have on voters' tendency to accept ambiguity, we explore yet another potential explanation of ambiguity preferences: the projection bias.

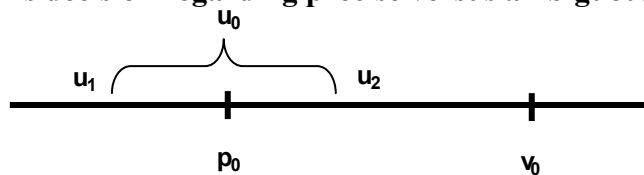
Two hypotheses

Projection biases may occur when voters evaluate candidates. Voters change their perception of the candidate's policy position by reducing the distance to their own policy preference without any evidence suggesting that this is justified (Krosnick, 2002). Projection biases have been extensively studied using cross-sectional and panel data, reporting positive and negative projection effects when candidates are evaluated (Krosnick, 2002). Callander and Wilson (2008) and Jensen (2009) propose models to explain how projection biases can encourage voters to favor ambiguous candidates. Callander and Wilson (2008) assume that context-dependent voting occurs in elections: i.e., voters include, in the evaluation of a focal political party, their perceptions of other political parties. This encourages voters to develop a preference for ambiguity irrespective of their preference intensity or their risk attitude. The reason for this is that voters care about the relative differences between candidates, and that they care more about differences that are closer to their position than about those that are further away.

The latter point will be explained further with reference to Figure 3.1. A voter's position regarding an issue is located at v_0 and s/he has to decide whether to give her or his vote to an

ambiguous candidate – centered at u_0 – or a precise counterpart – positioned at p_0 . We assume that the political system works under the proximity rule (Downs, 1957).¹³ This means that voters cast their ballots sincerely, and that they choose the option closest to their political stand.¹⁴ Regarding the ambiguous strategy, all the possible policy positions between u_1 and u_2 are included. Note that the segment where the ambiguous strategy is closer to the voter's position (u_0-u_2) has the same length as the segment where the precise option is closer (u_1-u_0). Callander and Wilson (2008) argue that voters care more about the relative differences of candidates' positions that are closer to their own position (u_0-u_2) than about the ones that are further away (u_1-u_0). In this case, although $u_0=p_0$ (i.e., the precise and ambiguous candidates seem to be at the same distance), voters prefer ambiguous options because they give more weight to the differences that are closer to their own position, even if they are risk-averse. As a consequence, all voters are argued to develop a taste for ambiguity. This is a process similar to the projection bias mechanism.

Figure 3.1: Voter's decision regarding precise versus ambiguous strategies



Jensen (2009) proposes explicitly that the projection bias could be a reason to prefer ambiguity. His model does not need to assume context-dependent voting to sustain that ambiguous candidates do appeal to voters. The argument is that if a candidate is liked (disliked) by some voters (e.g., due to their political affiliation) and if that candidate offers an ambiguous option,

¹³ Of course, we could develop our logic as well under the assumption of directional voting (Rabinowitz and Macdonald, 1989). However, this is not the objective of the current chapter. Note that we do not expect major changes in the results.

¹⁴ Given the fact that u_0 and p_0 are at the same distance from v_0 , traditional political space theory would predict that a voter is indifferent between both options, provided s/he is risk-neutral. If a voter is risk-averse, not even location advantages would compensate for the uncertainty created by the ambiguous option. Then, these voters always choose precise options. Only risk-loving voters would support ambiguous candidates (see Shepsle, 1972).

then those voters would perceive the candidate as closer (further) to their ideal policy positions even if there is no evidence to suggest this. For instance, consider a voter who likes (dislikes) a candidate (u_0) with an ambiguous position, as visualized in Figure 3.1. A voter could judge that the probability of implementing the alternative policies across the interval (u_1 - u_2) is not the same along the segment. If that voter thinks that the alternatives closer to her or his preferred policy option (u_0 - u_2) are more (less) likely to be implemented than the further alternatives (u_1 - u_0), then this voter has a positive (negative) projection bias favoring (rejecting) the ambiguous candidate.

Tomz and Houweling (2009) found that party affiliation induces a projection bias when voters are evaluating candidates' positions,¹⁵ in the sense that a voter is more likely to be optimistic (pessimistic) if the candidate who is being evaluated does (not) belong to the political party with which the voter is affiliated. But we believe a projection bias does not have to emerge from liking a candidate or party affiliation. We argue in line with Tomz and van Houweling (2009) that a positive projection bias can still occur when ambiguity is understood as a signal of flexibility in the eyes of the voters.

On the one hand, flexibility can be considered an important feature of a candidate's political platform that is used to attract voters. Frenkel (2014) presents an interesting discussion. She initially argues that candidates have no incentives to offer ambiguous platforms. The reason is that better and more prepared candidates are more likely to identify the best policy during campaigns. As a consequence, they can offer more commitment to their policy positions (i.e., signal less ambiguity) in relation to non-experienced candidates. Then, voters interpret ambiguous options as a signal of incompetency. However, she also argues that rigid positions,

¹⁵ Voters can change their perception based on other features, such as party affiliation and candidate's features, which are not related to the policy positions of candidates.

implying zero ambiguity, are costly because such rigidity does not allow candidates to change their position, even if they identify better policy options when they are in office. Voters perceive the candidate's lack of flexibility as a disadvantage. Then, voters prefer ambiguity because a candidate's flexibility is regarded as appealing. Therefore, a positive projection bias occurs that produces a general optimism in voters that would make them overestimate the probability of desirable outcomes from the alternatives that this candidate offers (Tomz & Van Houweling, 2009).

On the other hand, a negative projection bias could occur when voters perceive ambiguous strategies as non-credible (Tomz & Van Houweling, 2009). In this case, ambiguity not only introduces non-credibility because of the wide range of policy positions included in the candidate's platform, but also could affect the public image of the candidate by making her or him appear as evasive or spineless (Tomz & Van Houweling, 2009). Therefore, taken both perspectives together, the extant literature suggests that ambiguous candidates could expect advantages and / or disadvantages when competing with ambiguous or precise options, due to the perceived flexibility or non-credibility of their positions. Based on theoretical reasoning above we believe projection bias can exist even when voters do not have a candidate preference based on candidate's characteristics or party affiliation, and will influence the preference for ambiguity a voter might have. As distance is the main influencer behind candidate choice, we formulate the following baseline hypothesis regarding the existence of projection bias:

Hypothesis 1a: If a voter has a positive projection bias in favor of ambiguous strategies, then s/he will vote for an ambiguous instead of a precise candidate when the position of the precise candidate and the expected position of the ambiguous candidate are located at the same distance from the voter's preferred policy position (i.e., $u_0 = p_0$).

Hypothesis 1b: If a voter has a negative projection bias against ambiguous strategies, then s/he will vote for a precise instead of an ambiguous candidate when the position of the precise candidate and the expected position of the ambiguous candidate are located at the same distance from the voter's preferred policy position (i.e., $u_0=p_0$).

Note that we developed hypotheses without imposing any assumption about voters' risk attitude. We assumed that positive and negative projection biases influence voting behavior independent of risk attitudes. In order to confirm this, we suggest a pair of stronger hypotheses that include voter's risk behavior.

Hypothesis 2a: If a voter has a positive projection bias in favor of ambiguous strategies, then s/he will vote for an ambiguous instead of a precise candidate when the position of the precise candidate and the expected position of the ambiguous candidate are located at the same distance from the voter's preferred policy position, even if s/he is a risk-averse voter (i.e., $u_0=p_0$ for all risk attitudes).

Hypothesis 2b: If a voter has a negative projection bias against ambiguous strategies, then s/he will vote for a precise instead of an ambiguous candidate when the position of the precise candidate and the expected position of the ambiguous candidate are located at the same distance from the voter's preferred policy position, even if s/he is a risk-loving voter (i.e., $u_0=p_0$ for all risk attitudes).

Method

Web survey experiment

To design the experiment, we follow the studies of Tomz and Houweling (2009), Duch (2010), and Eckel and Grossman (2002, 2008). Tomz and Houweling (2009) found that party affiliation

induces a projection bias when voters are evaluating candidates' positions,¹⁶ in the sense that a voter is more likely to be optimistic (pessimistic) if the candidate who is being evaluated does (not) belong to the political party with which the voter is affiliated. However, when they tried to exclude party affiliation's effects, they did not find evidence that a projection bias influences preference for ambiguity. However, their experiment was conducted in the US, where the political system is characterized by dominant bipartisan competition and high party affiliation. In that setting, to exclude the effect of party influence is very difficult, since voters could easily identify the positions of the anonymous parties as Democratic or Republican positions. In order to isolate the projection bias effect – i.e., to exclude the impact of party affinity – we conduct our experiment in the multi-party political system with low party affiliation of the Netherlands.

We conducted a web-based experiment with 300 students from Tilburg University in the Netherlands. We incentivized their participation by offering 10 money prizes of 40 euro for filling the experiment plus a larger prize of 100 euro for the winner of the lottery game (see below for greater detail). An important advantage of the web-based experiment is that we can generate different scenarios for the participants, depending on their responses. In this manner, we can focus on the most relevant scenarios for each individual, as not all scenarios fit with each voter position. This has enabled us to get the most out of our dataset, as we were able to increase the variations per scenario, decreasing the sample size necessary to obtain valid and robust results.

We argue that the Netherlands constitutes an ideal country to test our hypotheses due to its low party affiliation among the population and its multi-party political system. These two

¹⁶ Voters can change their perception based on other features, such as party affiliation and candidate's features, which are not related to the policy positions of candidates.

features ensure that party effects are not very important in explaining preference for ambiguity. Generally, there has been a decline of social-structural voting in many democracies (Berglund et al., 2005; Enyedi, 2008; Green-Pedersen, 2007). The Netherlands is not an exception – quite the contrary. In the Netherlands, social-structural and religion-based voting has declined rather dramatically in recent decades (Green-Pedersen, 2007). One of the consequences of this trend is that party affiliation has declined drastically, too, and that voting in the Netherlands has become exceptionally unstable (Mair, 2008).

We consider three important issues that dominate the Netherlands' political system for about two decades. In this manner, we can explore the effect that specific issues may have on voters' preferences for ambiguity. Earlier work identified two or three key sources of political conflict in the Netherlands (Bakker, Jolly, & Polk, 2012; Brug van der & Spanje van, 2009; Kriesi & Frey, 2008; Otjes, 2011; Pellikaan, de Lange, & Van der Meer, 2007), which we refer to as the economic left/right, the social left/right and the pro-/anti-European integration issues.¹⁷ We decided to use three specific issues related to these three sources of political conflict identified by the literature: (1) integration of immigrants in the Netherlands (i.e., social left/right); (2) how to solve the debt crisis, using either reduction of public spending or increasing taxes to the rich people (i.e., economic left/right); and (3) the power of European institutions over the Netherlands' policies (i.e., pro-/anti-European integration).

The experiment was conducted in Dutch, as this is the native language of the participants. It took an average of 20 minutes to complete the whole survey experiment. Our survey experiment was divided in three parts. The first part asked all the relevant background

¹⁷ Admittedly, the discussion about whether the economic and the social left/right issues reflect one or two separated dimensions is still ongoing.

information regarding participants, such as gender, age, ethnicity, religion, degree of religiosity, strength of Dutch and European identification, parents' education and profession, and sources for funding the students' studies. In the second part, we requested information about voters' preferences, and participants had to indicate their voting preferences in view of different scenarios regarding the locations of the precise versus ambiguous candidates for all three selected issues. Finally, in the third part, we conducted a lottery game with money prizes to measure risk behavior. To guarantee that every person participates only one time in the survey, a unique code was created automatically for every user. This code was cross-checked with the computer's IP. We excluded eight persons that participated twice in the study.

Student versus representative samples

In political science, external validity is considered to be key, and rightly so. However, the tendency to dismiss experiments, especially those conducted with student samples (McDermott, 2002), can be seen as collateral damage of this emphasis, particularly because experimental studies' great strength is their large internal validity. A similar validity debate is ongoing in many social disciplines. From this debate, an important insight is that experiments with student samples are justified if the research is exploring "fundamental processes, structures and outcomes" that are related "with the basic characteristics of human nature that are relatively independent of context and life experiences" (Bello et al., 2009, p.362). We argue that the study of projection biases and ambiguity preferences in the context of voting behavior indeed relate to such fundamental human processes.

On the one hand, exploring voters' responses to candidates' ambiguity can be considered a fundamental process of a basic human nature that operates "relatively independent of context and life experiences." Experiments that elicit risk aversion in economics are similar in nature to

what we aim at with our study. Indeed, in these studies, experiments with student samples are well accepted, and hence widely used (amongst others Dave, Eckel, Johnson, & Rojas, 2010; Dohmen et al., 2011; Eckel & Grossman, 2002, 2008). On the other hand, student samples have a key advantage, in our context, by featuring the lowest party affiliation of all among the voting population (Campbell, Converse, Miller, & Donald, 1960). So, with student samples, we can limit party affiliation effects to isolate the impact of ambiguity. This is an important advantage *vis-à-vis* representative samples from the general population.

Some have questioned whether experiments with students can reflect how the general public will respond to political phenomena (Benz & Meier, 2008; Sears, 1986), as students and the general public may not share the same distribution of characteristics. However, this may not be important when evaluating the effect of a set of characteristics on a variable of interest. Cooper, McCord and Socha (2010), in a study about personality traits and political opinion, found that although student and non-student samples are associated with a different distribution of personality traits, the size and the direction of personality traits' effect on political opinion was similar in both samples. Indeed, Druckman and Kam (Druckman & Kam, 2011) argue that the selection of the sample (e.g., students or non-students) is not the largest threat to external validity in political science. Using simulations, they show that even if the distribution of characteristics is not the same across samples, the size and direction of the relationship between two variables are identical. The key requirements are (a) that the sample, student or otherwise, has enough variation regarding the variable of interest and (b) that individual effect heterogeneity is not expected to dominate (i.e., the size of the effect of the relationship does not vary as a consequence of specific features of individuals).

In our case, we test the relationship between risk attitude, projection bias and ambiguity preference. Although we acknowledge that the distribution of risk attitudes and projection biases may well be different between students and the general public, we have enough variation as to the distribution of risk attitudes and projection biases in our sample. Additionally, we expect that the effect of risk attitude and projection bias on ambiguity preference will not depend on other individual specific features (e.g., age or gender). What could be argued, however, is that belonging to a cleavage group could influence the preference for ambiguity: Since our student sample may not perfectly reflect the heterogeneity of cleavage groups in society, our results can be biased. However, in the Netherlands, access to university is widespread. Indeed, the university students in our sample are very diverse in terms of religious beliefs and family background. Moreover, in order to take into account cleavage effects, we control for features of the students' families such as religion, education, profession and parental income. When measuring religion we chose to include the *belonging to a religion and the intensity of the religion* as control variables as they are separate and independent aspects of religion. The intensity of the religion (or intrinsic religion) was measured following Koenig and Büsing (2010).

Voters' preferences

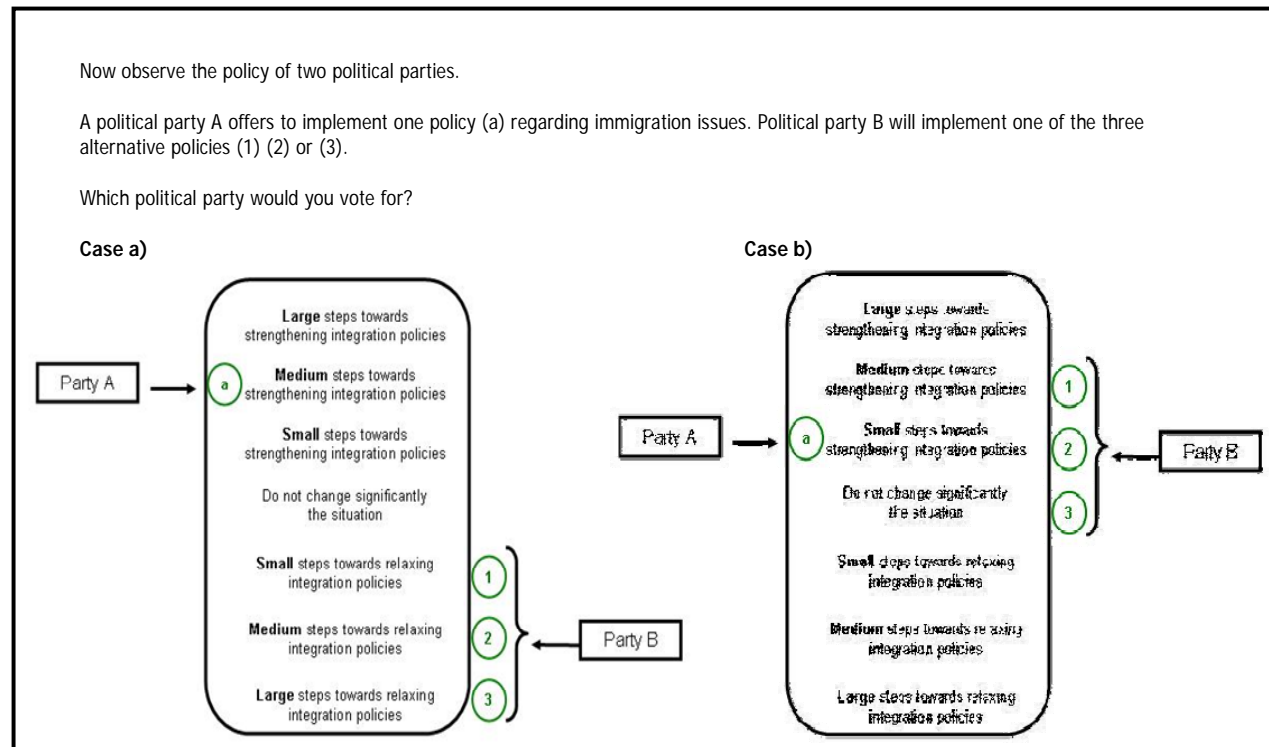
Participants were asked to express their political preference regarding three political issues. We use a seven point-scale with one neutral position (no changes), three positions strengthening or increasing a specific policy in one direction, and three positions relaxing or decreasing the same policy in the opposite direction, providing three levels in each direction that range from small, medium to large steps. Figure 3.2 visualizes our set-up. For each issue, an introductory explanation was given, as can be seen at the right-hand side of Figure 3.2. Subsequently, every

participant was asked to choose the most preferred policy stand regarding this issue. The survey experiment proceeded in a similar way for the other two issues.

We obtain information about voters' preference for ambiguous candidates by providing a graphical summary of the positions of two candidates: candidate A with a precise political stand versus a candidate B with an ambiguous stand. References to actual political parties were absent altogether, following Tomz and Houweling (2009, p.87): "By denoting some parties with letters, we were able to test [...] ambiguity in their purest form, without the potentially confounding effect of party." The precise candidate takes one out of seven positions. The ambiguous candidate takes three consecutive positions out of seven, as shown in Figure 3.3.

Figure 3.2: Voters' preferences regarding political issues in the Netherlands

<p>Large steps towards strengthening integration policies</p> <p>Medium steps towards strengthening integration policies</p> <p>Small steps towards strengthening integration policies</p> <p>Do not change significantly the situation</p> <p>Small steps towards relaxing integration policies</p> <p>Medium steps towards relaxing integration policies</p> <p>Large steps towards relaxing integration policies</p>	<p>B4. "There is a lot of concern about the growing number of immigrants in The Netherlands. Some people believe that immigration policies should be strengthened in order to encourage immigrants to integrate to the Dutch society. Others believe that immigration policies should be relaxed because immigrants should be allowed to keep their own cultural identity and integration can not be enforced". Now take a moment to read the following policies. In comparison to the current situation, which one of the following policies would you like to be implemented the most?</p>
<p>Large steps towards strengthening influence of European institutions on national policies</p> <p>Medium steps towards strengthening influence of European institutions on national policies</p> <p>Small steps towards strengthening influence of European institutions on national policies</p> <p>Do not change significantly the situation</p> <p>Small steps towards reducing influence of European institutions on national policies</p> <p>Medium steps towards reducing influence of European institutions on national policies</p> <p>Large steps towards reducing influence of European institutions on national policies</p>	<p>B5. The economic crisis of some European countries has strengthened the debate whether the Netherlands should remain in the European Union. Some people claim that the influence of European institutions on national policies should be strengthened, while others believe that European institutions have already too much power and that their influence on national policies should be reduced. Now take a moment to read the following policies. In comparison to the current situation, which one of the following policies would you like to be implemented the most?</p>
<p>Large increase of government expenditure, increasing taxes on the wealthiest</p> <p>Medium increase of government expenditure, increasing taxes on the wealthiest</p> <p>Small increase of government expenditure, increasing taxes on the wealthiest</p> <p>Do not change significantly the situation</p> <p>Small reduction in government expenditure, reducing public services</p> <p>Medium reduction in government expenditure, reducing public services</p> <p>Large reduction in government expenditure, reducing public services</p>	<p>B6. As a result of the financial crisis, Europe and The Netherlands face debt problems. This is putting pressures to control fiscal deficit (i.e. government expenditure minus total taxes). Some people argue that to control the fiscal deficit the country needs to reduce government expenditure, even if that means to reduce spending in public services (e.g. education, health). However, others argue that this could harm growth and it is better to increase government expenditure but increasing as well the taxes on certain groups (e.g. the wealthiest). Now take a moment to read the following policies. In comparison to the current situation, which one of the following policies would you like to be implemented the most?</p>

Figure 3.3: Ambiguous versus precise strategies

The positions of the precise and ambiguous candidates were generated randomly. We grouped all the possible candidates' positions in four scenarios to make our work comparable to Tomz and Houweling (2009). In Scenario 1, the precise candidate is closer to the voter's preference than the ambiguous candidate – hence we have $|v_0 - p_0| < |v_0 - u_0|$. In Scenario 2, the ambiguous candidate is closer to the voters' preferences: $|v_0 - p_0| > |v_0 - u_0|$. Scenario 3 is a *straddle tie*, with the precise candidate being located at the center of the ambiguous candidate's interval: i.e., $p_0 = u_0$ (case (a) in Figure 3.3). Finally, Scenario 4 gives a *reflected tie*, where the precise and the ambiguous candidate are at the same distance from the voter's preferred position: i.e., $p_0 \neq u_0$ and $|v_0 - p_0| = |v_0 - u_0|$ (case (b) in Figure 3.3).¹⁸

¹⁸ All the participants can be exposed to Scenarios 1, 2 and 3. However, only participants whose preferred choices are either small steps or a neutral position can be exposed to Scenario 4. Scenario 4 requires the two candidates to be at the same distance from voter's preferred option. If a voter indicates that her or his preferred

In order to measure positive (negative) projection biases, we asked the respondent: “If you have to guess: Which of the three alternative policies of party B do you think is more likely to be implemented when party B is elected?” We do this to measure the participants’ projection bias *vis-à-vis* ambiguity. We define $B = |v_0 - u_0| - |v_0 - u_B|$, where u_B is the voter’s guess of the position of the ambiguous positions, which reflect this voter’s bias. On the one hand, if this guess u_B is between $(u_0 - u_2)$ in Figure 3.1, then the projection bias is positive, with $B > 0$. On the other hand, if u_B is between $(u_1 - u_0)$ in Figure 3.1, then the projection bias is negative, with $B < 0$. If voter’s guess is similar to the central position of the ambiguous candidate, then $u_B = u_0$ and $B = 0$, indicating the absence of any projection bias.

Risk behavior

We want to measure the participants’ risk attitude to explore whether or not this is related to the decision to vote for ambiguous candidates. In the voting literature, risk is mostly measured as a characteristic. The risk-taking propensity of a person (which is a "a descriptive label of the degree to which an individual appears to avoid or seek out risky options or behaviors" (Weber, Blais, & Betz, 2002, p.267) will influence how a person will generally deal with ambiguity (a certain versus an uncertainty option) independent from the context given, as high risk tolerance has been associated with a high tolerance for ambiguity (Wally & Baum, 1994). In this context, we study whether voters chose for an ambiguous candidate or not, the ambiguous candidate being a candidate from which the voter is not certain as to her or his exact position. So, for the voter, it is not clear which position s/he will exactly chose when the candidate is being elected.

option is medium or large steps in any direction, then there are not enough available options to construct a Scenario 4.

Choosing for this ambiguous candidate incorporates a risk that the candidate might position him/herself further away from (or closer to) the voters preferred position.

In Tomz and Houweling (2009), risk attitude was measured by using a three-point scaled question, asking whether a voter considers her or himself to be risk-loving, risk-averse or risk-neutral. We want to improve upon this not-so-valid measurement by using a lottery with monetary prizes at stake, a highly validated and well-established method in economics. Self-reported risk attitudes such as those used by Tomz and Houweling (2009) are associated with too many self-serving biases, inattention and strategic motives to be valid, providing a distorted risk attitude measure (Camerer & Hogarth, 1999; Dohmen et al., 2011). In contrast, experimental studies with real money at stake offer an incentive that is fully compatible with the measurement of risk attitudes (Dohmen et al., 2011): “In experimental decisions, individuals are assumed to reveal their preferences as long as the performed tasks have salient payoff consequences” (Dave et al., 2010, p.220). This means that individuals elicit their behavior reliably and validly only if they perform tasks that involve decisions with real consequences for the payoff they will obtain.

There are two common experiments to elicit risk preferences: Holt and Laury’s (2002) and Eckel and Grossman’s (2002, 2008), with the first method being simpler than the second instrument (Dave et al., 2010). In that article of Dave, Eckel, Johnson and Rojas (2010), the two measurements are being compared to each other. They conclude that the measurement of Eckel and Grossman (2002, 2008) is only superior over the measurement of Holt and Laury (2002) when the respondents have high mathematical skills. Although we focus on academic students, we believe these second-year students do not all possess these skills.

Therefore, we decided to use the Holt and Laury (2002) method, given its simplicity. We applied a variation of their lottery, as developed by Duch (2010). The lottery consists of eight gambles. In each gamble, a participant has to choose between two options, as provided in Table 3.1. Each option offers the participant the possibility to receive points that are accumulated in each gamble. The first option gives the participant a pre-defined prize: this is the secure option. The second option allows the participants to play a lottery that consists of throwing a dice: if the dice shows 4, 5 or 6, the participant obtains a high payoff (with 50% probability); but if the dice gives 1, 2 or 3, the participant receives nothing (with 50% probability, too). A significant monetary price (100 Euro) was offered for the participant accumulating the highest number of points. In the following gambles, the maximum payoff of the lottery was reduced, increasing the perceived risk in each gamble in comparison to the secure option. Since the objective is to obtain more points, reducing the extra payment for gambling in comparison to the secure option would convince participants to opt for the secure payoff, *ceteris paribus*. Therefore, the more a participant continues gambling, the more risk-loving s/he is.

Table 3.1: Experimental game to elicit risk preferences

Round	Option	Points	Round	Option	Points
1	A certainty	5 points with certainty	5	A certainty	5 points with certainty
	B Play the lottery	0 points if the die indicates 1,2 or 3 14 points if the die indicates 4,5 or 6		B Play the lottery	0 points if the die indicates 1,2 or 3 10 points if the die indicates 4,5 or 6
2	A certainty	5 points with certainty	6	A certainty	5 points with certainty
	B Play the lottery	0 points if the die indicates 1,2 or 3 13 points if the die indicates 4,5 or 6		B Play the lottery	0 points if the die indicates 1,2 or 3 9 points if the die indicates 4,5 or 6
3	A certainty	5 points with certainty	7	A certainty	5 points with certainty
	B Play the lottery	0 points if the die indicates 1,2 or 3 12 points if the die indicates 4,5 or 6		B Play the lottery	0 points if the die indicates 1,2 or 3 8 points if the die indicates 4,5 or 6
4	A certainty	5 points with certainty	8	A certainty	5 points with certainty
	B Play the lottery	0 points if the die indicates 1,2 or 3 11 points if the die indicates 4,5 or 6		B Play the lottery	0 points if the die indicates 1,2 or 3 7 points if the die indicates 4,5 or 6

For 90 per cent of the participants (276 out of 308), we could easily identify their risk attitudes. These participants either always gambled or never gambled, or they started gambling but stopped when they perceived that the risk was higher than they were willing to accept. Four per cent of our sample (11 individuals) did not gamble at first, but started to gamble later until they decided to stop gambling. Probably, these participants misunderstood the game in the first round, only revealing consistency in the following rounds. We therefore assume that these individuals' risk attitudes are related to the moment they stopped gambling, without considering the first round. Adding or removing these participants does not change the results of our analyses. For the remaining six per cent of our sample (20 individuals), we take into account the moment they

stopped gambling for the first time as a measure of their risk attitude, irrespective of whether or not they decided to gamble again in the following rounds. Again, adding or removing these participants does not affect the results of our analyses. In all, we have eight risk attitude categories, clearly identified according to where the participant decided not to gamble anymore.

Results

Sample characteristics

We have a relatively large sample, with sufficient variation regarding essential participant characteristics. The experiment was carried out between 5 and 23 November 2012: 308 students were part of the experiment, of whom 34 per cent were women, 85 per cent voted in the Dutch parliamentary election of September 2012, and 97 per cent were not affiliated to any political party. Our participants belong to different religions: 38 per cent are Catholic, 8 per cent Protestant, and 3 per cent Muslim. The other 51 per cent do not belong to any religion.

The participants come from diverse socio-economic family backgrounds. Regarding parents' education level, 44 per cent of the fathers and 32 per cent of the mothers attended university education, 24 per cent of the fathers and 30 per cent of the mothers completed general secondary education, and 30 per cent of fathers and 37 per cent of the mothers have vocational education. Participants from families with basic education represent only 1 per cent of the sample. Regarding parents' employment status, 28 per cent of the fathers work as CEO, 25 per cent as white-collar employee, 14 per cent as blue-collar worker, and 26 per cent as independent entrepreneur. The remaining 6 per cent are unemployed. As to the mothers, 7 per cent are CEO,

42 per cent white-collar employee, 19 per cent blue-collar worker, 11 per cent independent entrepreneur, 15 per cent take care of their children, and 6 per cent are unemployed.

Preferences for ambiguity

In Table 3.2, a few descriptives are provided. Overall, we clearly observe that the percentage of voters opting for ambiguity is affected by the distance of candidates' to the voter's preferred policy. Voters select the option that is closer to them in Scenarios 1 and 2. This is as expected. However, surprisingly, when both candidates are at the same distance from the voter's preferred policy in Scenarios 3 and 4, the ambiguous candidate tends to benefit from a (small) advantage. Regarding Scenario 3, which is the straddle tie, Tomz and Houweling (2009) argue that voters do not have any incentive to prefer ambiguity; however, in line with our theoretical argumentation we believe this is possible, as stated in our hypothesis development. Our results show that an important percentage of participants still goes for the ambiguous candidate. The most striking result involves the pro-/anti-European integration issue, as here a majority of people opts for the ambiguous candidate (54 per cent). In Scenario 4, which is a reflected tie, there is a clear advantage for the ambiguous candidate in the case of the social left/right and the pro-/anti-European integration issues. However, in the economic left/right issue setting, a slight preference for the precise candidate can be observed.

Table 3.2: Ambiguity preference according to distance by issue

Scenario	Distance from voter's preferred option		Social left/right	Economic left/right	Pro-/anti-European integration
1	Precise is closer	-2	2.7%	17.2%	5.9%
		-1	11.4%	18.6%	17.7%
2	Ambiguous is closer	1	96.5%	91.8%	78.6%
		2	95.2%	88.2%	89.7%
3	Straddle tie (both are in the same position u=p)		39.2%	41.4%	53.7%
4	Reflected tie (both are in the same distance)		61.8%	48.8%	63.4%
Average (all scenarios)			51.1%	51.0%	51.5%
Average (Scenario 3 and 4)			50.5%	45.1%	58.6%

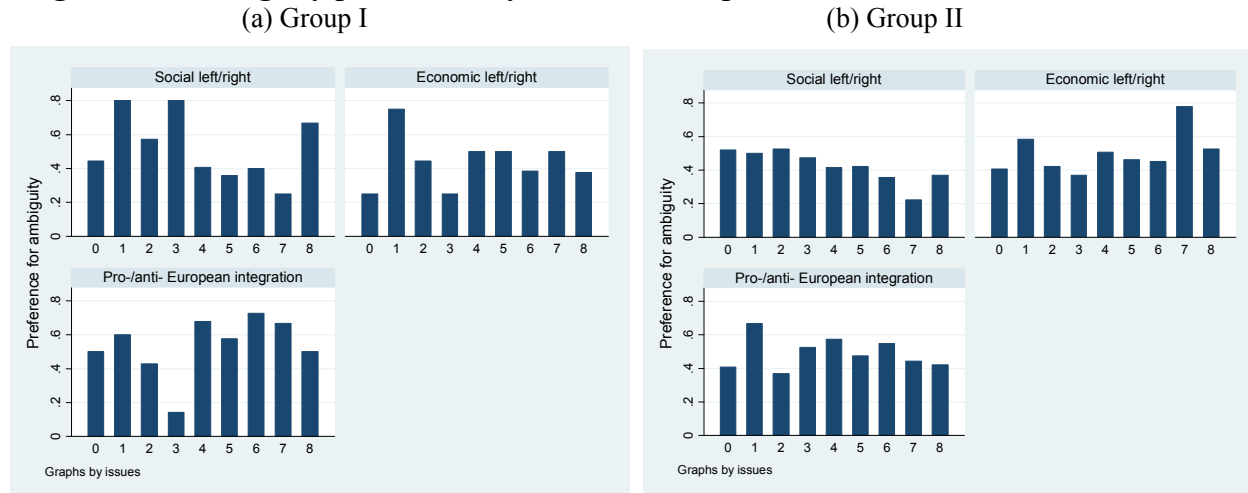
So, the descriptives reveal a pattern for Scenarios 3 and 4, where both candidates are at the same distance from the voter's preferred policy, that is different from that for Scenarios 1 and 2, where difference in distance between candidates and voters can explain the preference for ambiguity. Therefore, we continue by running analyses using two groups of participant: Group I includes Scenarios 3 and 4 only, and Group II includes all voters. Group I is important because we can then test our hypotheses in a setting without considering distance advantages. In Group II, with all voters included, the setting is more demanding because difference in distance between candidates may well be the main determinant of any preference for ambiguity.

Preference for ambiguity and risk attitude

When we take into account voter's risk attitude, we do not find a clear trend, neither in Group I nor in Group II, as we can see in Figure 3.4. On the contrary, risk attitude does not seem to influence preference for ambiguity in any way, with one exception: Only regarding the social left/right issue, when we consider all voters in Group II, a negative relationship between being a

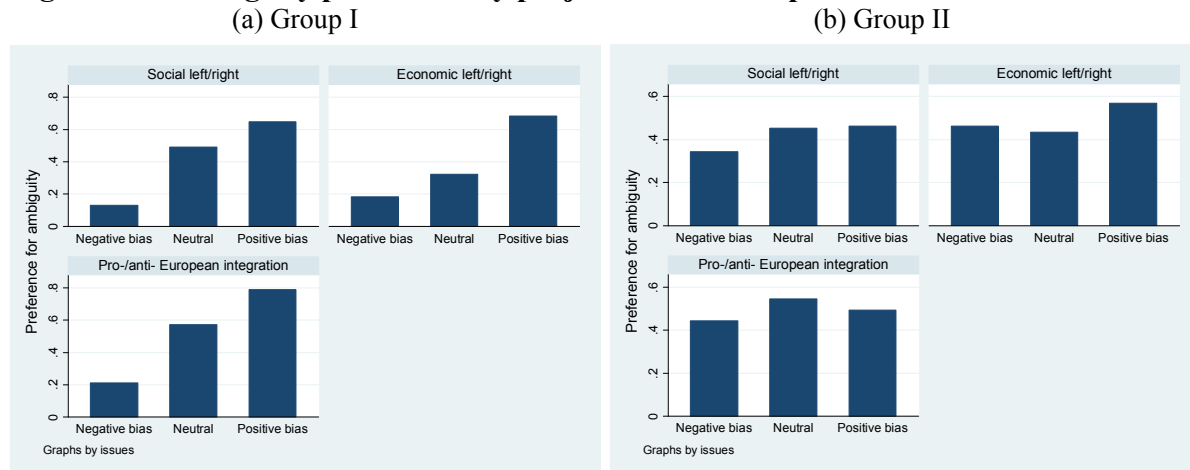
risk-loving voter and opting for the ambiguous candidate can be observed (see the upper left-hand side of Figure 3.4-b).

Figure 3.4: Ambiguity preference by risk level and political issue



Projection bias and preference for ambiguity

When we consider the projection bias and the preference for ambiguity, the results differ for Group I *vis-à-vis* Group II. In Group I, there is a clear and positive (negative) relationship between expressing a positive bias (negative bias) for the ambiguous candidate and a preference for ambiguity (precision), as can be noticed in the left-hand side of Figure 3.5. When all voters are included in Group II, we observe no clear preference for ambiguity in the case of a positive projection bias. Then, voters' preference for either candidate is mainly influenced by the candidates' positional distance from the voter's preferred policy.

Figure 3.5: Ambiguity preference by projection bias and political issue***Probability model of preferences for ambiguity***

In order to test for the likelihood of voting for the ambiguous candidate, we estimate a probability model for each of the three political issues. We test our hypotheses twice, for both groups, as explained above. Our probabilistic model takes the value of one when the voter opts for the ambiguous candidate, and the value of zero when s/he chooses the precise option. We test all these models considering the influence of cleavage groups, measured by education and employment status of the participants' parents, religion of the participants, economic status of their families, and the degree to which the participant identifies with the country. Our main results remain robust, irrespective of adding or removing (sets of) control variables. Hence, we decided not to report detailed regressions here, for the sake of brevity. Of course, all detailed regression tables are available upon request.

Table 3.3: Preference for ambiguity by political issue – Group I

Variables	Social left/right			Economic left/right			Pro-/anti- European integration		
	(1) Basic	(2) Projection Bias	(3) Projection bias * Risk	(4) Basic	(5) Projection Bias	(6) Projection bias * Risk	(7) Basic	(8) Projection Bias	(9) Projection bias * Risk
Straddle tie	-1.113** (0.458)	-0.884* (0.478)	-0.790 (0.484)	-0.524 (0.440)	-0.539 (0.491)	-0.768 (0.515)	-0.503 (0.440)	-0.290 (0.488)	-0.364 (0.491)
Issue importance	0.0502 (0.275)	0.0457 (0.298)	0.117 (0.297)	0.162 (0.391)	0.136 (0.339)	0.0983 (0.350)	0.177 (0.270)	-0.0281 (0.269)	-0.034 (0.275)
Risk	-0.0518 (0.114)	0.0129 (0.110)	-0.134 (0.134)	0.0652 (0.107)	0.186 (0.120)	0.313** (0.128)	0.109 (0.102)	0.192* (0.114)	0.161 (0.110)
Projection Bias		1.105*** (0.316)	-1.036 (0.826)		1.940*** (0.512)	4.825*** (1.032)		1.378*** (0.371)	0.214 (0.694)
Projection Bias * Risk			0.537*** (0.208)			-0.612*** (0.192)			0.307* (0.163)
Intensity Catholic	0.533 (0.427)	0.637 (0.462)	0.567 (0.450)	-0.218 (0.402)	-0.0727 (0.385)	-0.316 (0.458)	-0.499 (0.413)	-0.679* (0.384)	-0.808** (0.401)
Intensity Protestant	0.513 (0.657)	0.581 (0.818)	0.696 (0.943)	omitted	omitted	omitted	0.360 (0.914)	-0.191 (0.716)	-0.0345 (0.761)
Intensity Islam	-57.601*** (2.843)	-66.39*** (2.842)	-58.733*** (3.197)	-1.101 (0.960)	0.113 (1.119)	0.277 (1.554)	omitted	omitted	omitted
Catholic	0.357 (0.502)	0.698 (0.542)	0.656 (0.540)	0.349 (0.493)	0.761 (0.554)	0.635 (0.594)	-0.257 (0.480)	-0.150 (0.527)	-0.101 (0.527)
Protestant	0.358 (0.785)	0.564 (0.899)	0.519 (1.012)	omitted	omitted	omitted	0.471 (0.940)	0.551 (0.737)	0.189 (0.799)
Islam	61.180*** (3.397)	70.12*** (3.405)	62.071*** (3.707)	1.878 (1.425)	2.323 (1.720)	1.868 (1.461)	omitted	omitted	omitted
Atheism	0.111 (0.659)	0.0871 (0.652)	0.083 (0.663)	-1.069 (0.716)	-1.237 (0.786)	-1.297 (0.809)	0.351 (0.601)	0.492 (0.657)	0.610 (0.685)
Feel Dutch	-1.450 (1.148)	-1.474 (1.190)	-1.587 (1.136)	-0.134 (1.524)	-0.354 (2.016)	-0.580 (2.186)	-0.829 (1.112)	-0.998 (1.036)	-0.969 (1.084)
Constant	1.884 (1.273)	1.254 (1.365)	1.789 (1.307)	-0.747 (2.059)	-1.733 (2.542)	-2.051 (2.681)	0.367 (1.392)	0.436 (1.317)	0.672 (1.377)
Observations	105	105	105	101	101	101	105	105	105
Log likelihood	-65.579	-59.982	-56.697	-64.241	-53.230	-49.431	-68.543	-60.677	-59.184
Pseudo R2	0.092	0.169	0.215	0.068	0.227	0.282	0.048	0.157	0.178

*** p<0.01, ** p<0.05, * p<0.1

Voters facing similar conditions

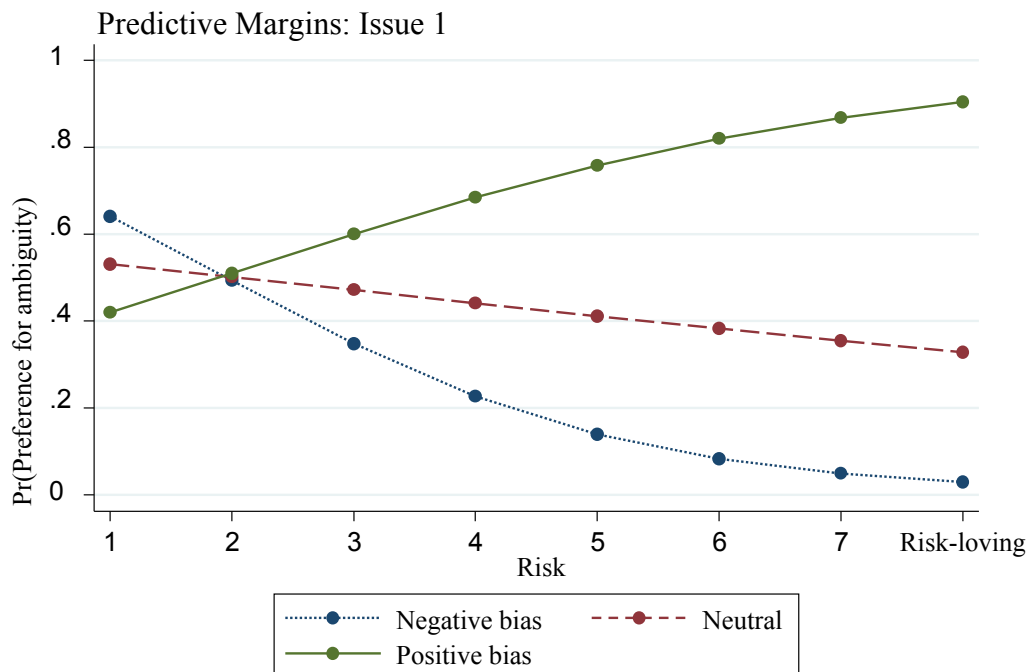
In Table 3.3, we present the results for participants that face candidates at the same distance from their preferred policy (i.e., Group I). The first columns regarding each issue – i.e., Columns (1), (4) and (7) in Table 3.3 – are the basic models in which we include the effect of voters' risk attitude but not that of the projection bias. In the second set of models regarding each scenario – i.e., Columns (2), (5) and (8) – we add the effect of the projection bias without, however, imposing restrictions as to the voters' risk attitude. In the third set of models regarding each issue – i.e., Columns (3), (6) and (9) – we introduce voters' risk attitudes, testing whether the projection bias has an effect on voters' preference for ambiguity when we consider risk-averse, risk-loving or risk-neutral voters.

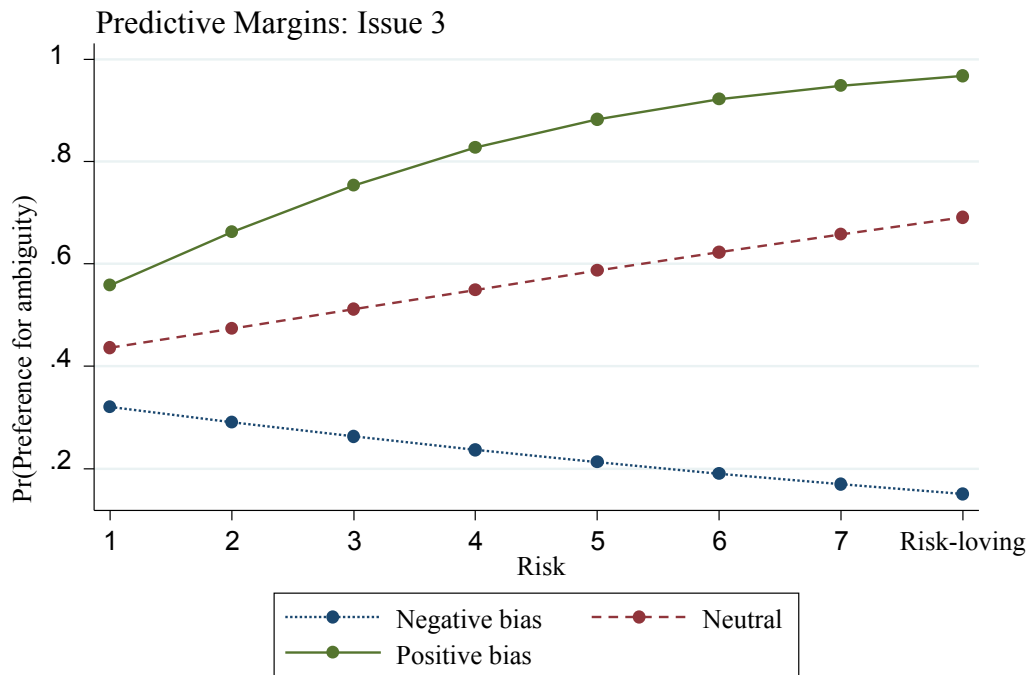
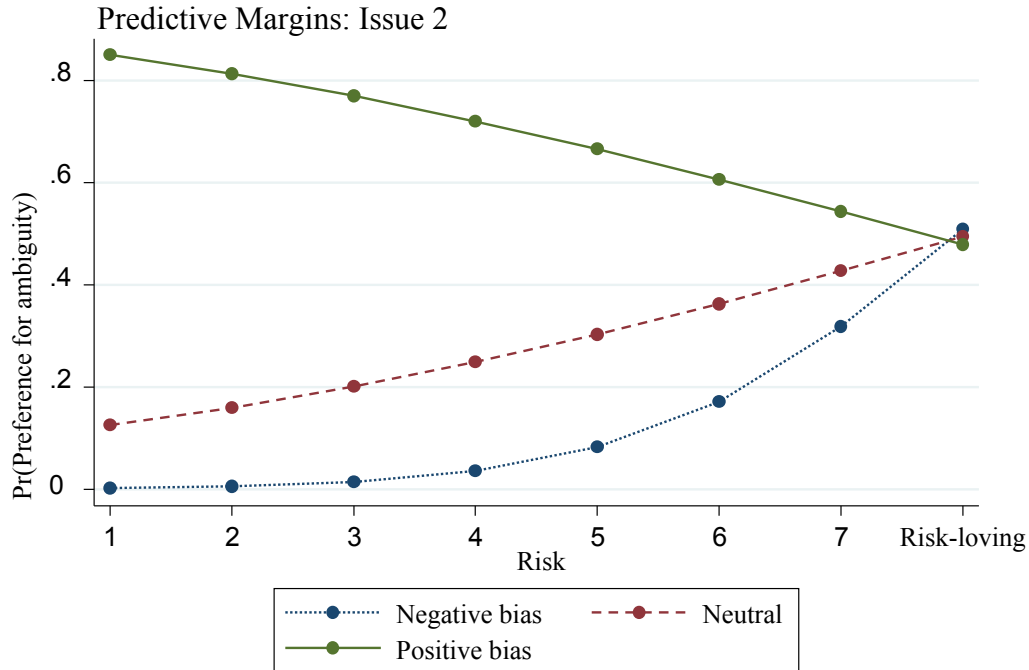
When analyzing issue 1 we see a striking result when we look at the coefficients of Islam and intensity of Islam. Analyses confirm there are no errors in the dataset. The extreme height of this coefficients can be explained by the fact that there are only two observations in this specific segment. The model predicts two coefficients (Islam as well as Intensity of Islam) based on these two observations in which one respondent goes for ambiguity and one for precise with both a relatively high intensity of religion. Excluding the two respondents in issue 1 scenario 3 and 4 (Group I) gave similar results. Therefore we decided to leave them in our analyses.

From the basic models, we learn that risk attitude does not have any effect on the preference for ambiguity. However, after introducing the potential impact of projection biases, we obtain a positive and significant relationship between a positive (negative) bias and preference for ambiguity (precision) in the case of all three political issues. This result supports our Hypotheses 1a and 1b.

By way of robustness analysis, we consider voters who are inclined to accept (reject) uncertainty due to their risk-loving (risk-averse) attitude by adding the interaction term “Projection bias * Risk attitude”. This interaction term is significant in all cases, while the coefficient of risk attitude is not significant in any case. However, surprisingly, the coefficient of the interaction term has a negative sign for the economic left/right issue. To clarify these effects, we plotted the graphs in Figure 3.6.

Figure 3.6: The interactions graphed (Group I)





The graph of issue 1 after the intercept shows that when you have a positive bias, the more risky you are, the more you prefer an ambiguous party, and when you have a negative bias, the more risky you are, the less likely you are to prefer an ambiguous party. This is in line with H2a and H2b. We calculated the marginal effects to see if our results are significant; we did this by

plotting the marginal effects (Appendix 3.2 contains all marginal effects graphs for group I) and running three test; for risk is 1, risk is 4, and risk is 6.¹⁹ We conclude that the projection bias's effect is statistically significant over the entire range of risk attitudes. The first part of the graph is hard to explain, as it goes against our theory. Here we see no effect at the intercept and at very low levels of risk, voters with a negative bias tend to prefer a candidate with an ambiguous position while voters with a positive bias are more inclined to prefer a candidate with a more precise standpoint.

For issue 3, the voters behave rather similar, except at low levels of risk. This graph is entirely in line with our theory, as reflected in H2a and H2b. Here we can see that the voter is rather indifferent regarding the level of ambiguity at low levels of risk, but as risk increases the effects of negative and positive bias on the preference for ambiguity are strengthened. Plotting and calculating the marginal effects²⁰ reveals that the entire graph is significant.

Issue 2 clearly behaves rather differently. In line with our hypothesis, the graph shows that when a voter has a positive bias, independently of risk attitude, he/she prefers an ambiguous position. However, the results are contradicting our predictions when we include risk preference. The voters with more risk and a positive bias seem to prefer a more precise instead of ambiguous position. At very high levels of risk, the voters seem to be indifferent regarding their bias. The slope of the graph is contradicting our hypothesis. The marginal effects indicate that the graph is

¹⁹ At risk is 1: Prob > chi2 = 0.0002
 At risk is 4: Prob > chi2 = 0.0086
 At risk is 6: Prob > chi2 = 0.0000

²⁰ At risk is 1: Prob > chi2 = 0.0789
 At risk is 4: Prob > chi2 = 0.0807
 At risk is 6: Prob > chi2 = 0.0704

significant.²¹ The effect of risk attitude seems to dominate, diminishing the impact of projection bias here.

Preference for ambiguity for all voters

Our main results remain unchanged for Group II, as can be seen in Table 3.4. One noticeable result is the effect of distance on the preference for ambiguity. Here, distance is the difference in absolute value between the ambiguous versus the precise candidates' positions from the voter's preferred policy position. The positive coefficient implies that the closer a candidate is, the higher the likelihood to opt for him/her. There is no doubt that voters opt for the candidate that is closer to their preferred policy position regardless the ambiguity or precision of his position. This coefficient is the largest, indicating its relevance in explaining preference for ambiguity. The difference of this effect across issues can be attributed to the specific features of every political issue.

The dummies for Scenarios 3 and 4 capture the difference between the participants exposed to candidates at the same distance *vis-à-vis* their counterparts dealing with scenarios with one candidate on closer distance than the other. For the economic left/right issue, participants facing straddle ties tend to prefer the precise option, with high significance when projection bias is excluded (with a p value of 0.015), and a medium significance including projection bias (with a p value of 0.064). For the social left/right issue, the variable straddle tie is insignificant.

²¹ At risk is 1: Prob > chi2 = 0.0165
 At risk is 4: Prob > chi2 = 0.0672
 At risk is 6: Prob > chi2 = 0.0544

Table 3.4: Preference for ambiguity by political issue – Group II

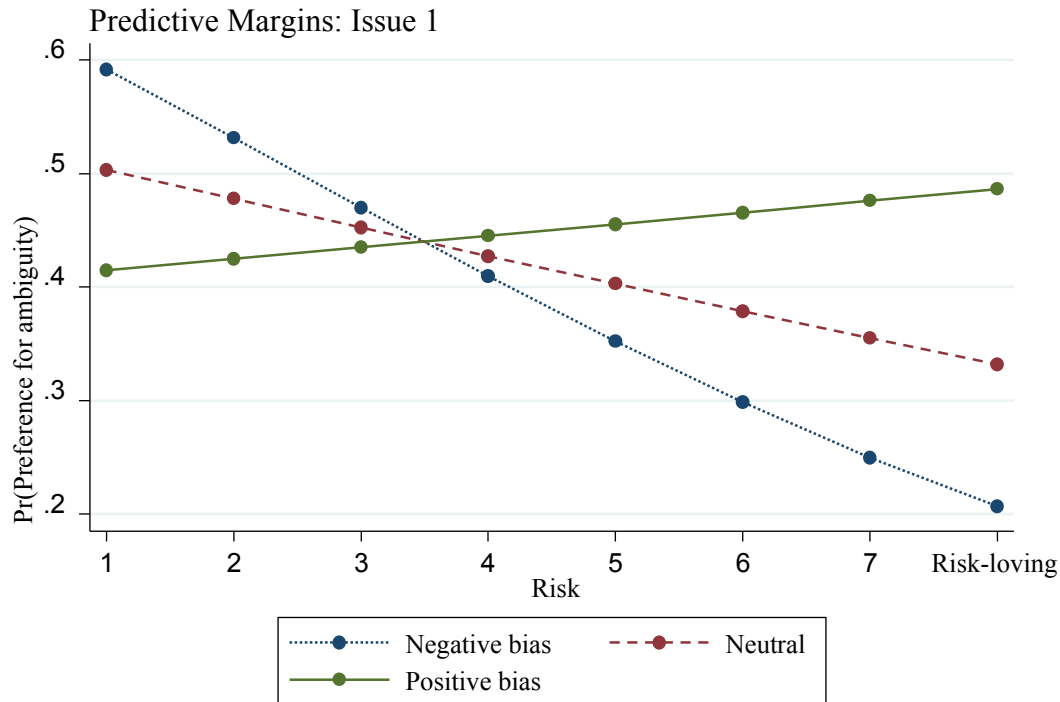
Variables	Social left/right			Economic left/right			Pro-/anti- European integration		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Basic	Projection Bias	Projection bias * Risk	Basic	Projection Bias	Projection bias * Risk	Basic	Projection Bias	Projection bias * Risk
Distance	2.695*** (0.418)	2.826*** (0.449)	2.951*** (0.485)	1.578*** (0.220)	1.800*** (0.282)	1.832*** (0.294)	1.271*** (0.184)	1.413*** (0.209)	1.417*** (0.206)
Straddle tie	-0.792 (0.484)	-0.795 (0.504)	-0.762 (0.529)	-0.747** (0.340)	-0.965*** (0.333)	-1.024*** (0.344)	0.239 (0.314)	0.310 (0.319)	0.302 (0.320)
Reflected tie	0.262 (0.520)	0.0424 (0.543)	-0.0147 (0.572)	-0.333 (0.405)	-0.567 (0.416)	-0.611 (0.424)	0.725* (0.387)	0.664* (0.388)	0.644 (0.395)
Issue importance	-0.078 (0.207)	-0.086 (0.224)	-0.107 (0.232)	-0.109 (0.199)	-0.079 (0.190)	-0.104 (0.195)	0.208 (0.174)	0.203 (0.175)	0.201 (0.176)
Risk	-0.096 (0.091)	-0.053 (0.093)	-0.143 (0.102)	0.105 (0.081)	0.122 (0.082)	0.135* (0.083)	0.030 (0.073)	0.047 (0.077)	0.054 (0.078)
Projection Bias		0.781*** (0.295)	-0.830 (0.666)		0.930*** (0.242)	1.383*** (0.482)		0.675*** (0.236)	0.885 (0.549)
Projection Bias * Risk			0.398** (0.161)			-0.110 (0.103)			-0.050 (0.117)
Intensity Catholic	0.282 (0.360)	0.309 (0.364)	0.321 (0.388)	0.101 (0.297)	0.159 (0.283)	0.156 (0.282)	-0.232 (0.286)	-0.241 (0.276)	-0.230 (0.275)
Intensity Protestant	0.490 (0.556)	0.518 (0.628)	0.572 (0.693)	-1.060 (0.726)	-0.932 (0.782)	-0.938 (0.789)	0.292 (0.559)	0.202 (0.537)	0.202 (0.530)
Intensity Islam	-2.048** (0.820)	-2.179** (0.856)	-2.372** (0.964)	-0.483 (0.483)	-0.217 (0.606)	-0.150 (0.627)	-1.243** (0.533)	-1.342** (0.542)	-1.358** (0.543)
Catholic	0.258 (0.421)	0.411 (0.417)	0.383 (0.422)	-0.005 (0.336)	-0.058 (0.340)	-0.083 (0.338)	-0.135 (0.325)	-0.085 (0.331)	-0.100 (0.336)
Protestant	0.352 (0.651)	0.456 (0.703)	0.360 (0.751)	1.516* (0.792)	1.559* (0.804)	1.575* (0.818)	0.419 (0.597)	0.400 (0.516)	0.435 (0.508)
Islam	2.584** (1.395)	2.692** (1.327)	2.978** (1.307)	0.740 (1.029)	0.902 (1.015)	0.808 (1.034)	2.281** (0.918)	2.524*** (0.907)	2.519*** (0.898)
Atheism	0.415 (0.549)	0.380 (0.556)	0.322 (0.533)	-0.770* (0.460)	-0.869* (0.487)	-0.926* (0.500)	-0.006 (0.408)	0.071 (0.426)	0.071 (0.427)
Feel Dutch	-0.592 (0.850)	-0.546 (0.854)	-0.594 (0.822)	-1.496* (0.782)	-1.206* (0.724)	-1.169* (0.705)	-0.147 (0.760)	-0.168 (0.696)	-0.199 (0.673)
Constant	1.200 (0.991)	0.933 (1.044)	1.495 (1.037)	1.768* (0.912)	1.338 (0.872)	1.371 (0.863)	-0.729 (0.956)	-0.877 (0.894)	-0.864 (0.879)
Observations	299	299	299	299	299	299	299	299	299
Log likelihood	-100.304	-96.361	-92.730	-140.359	-132.989	-132.544	-157.434	-152.714	-152.612
Pseudo R2	0.507	0.527	0.544	0.322	0.358	0.360	0.240	0.263	0.264

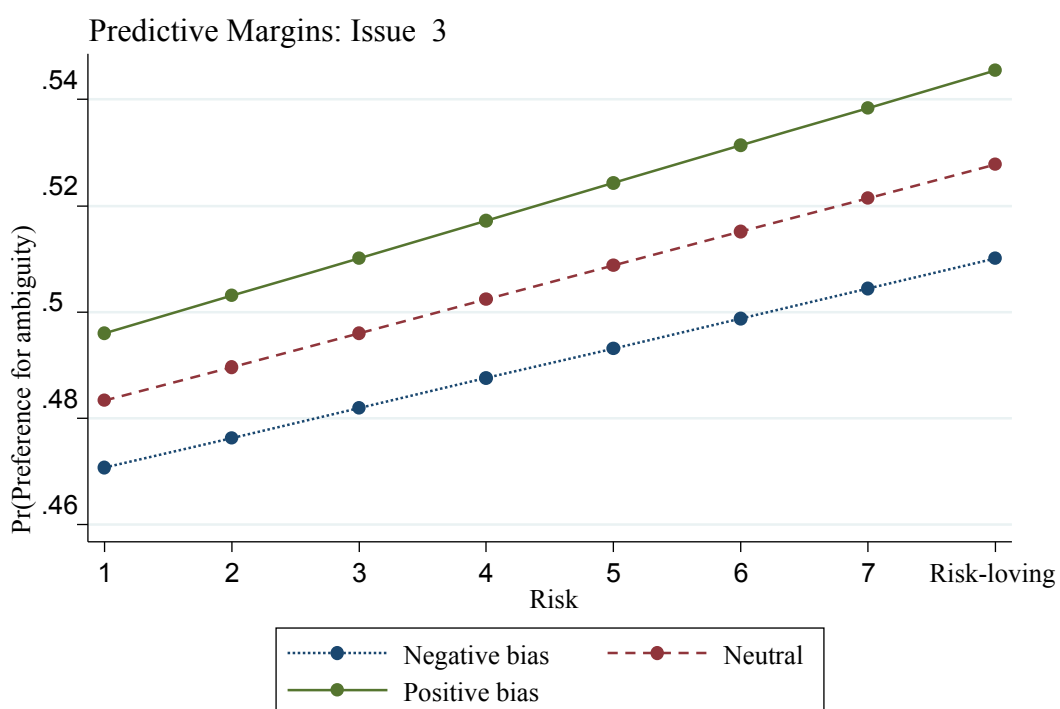
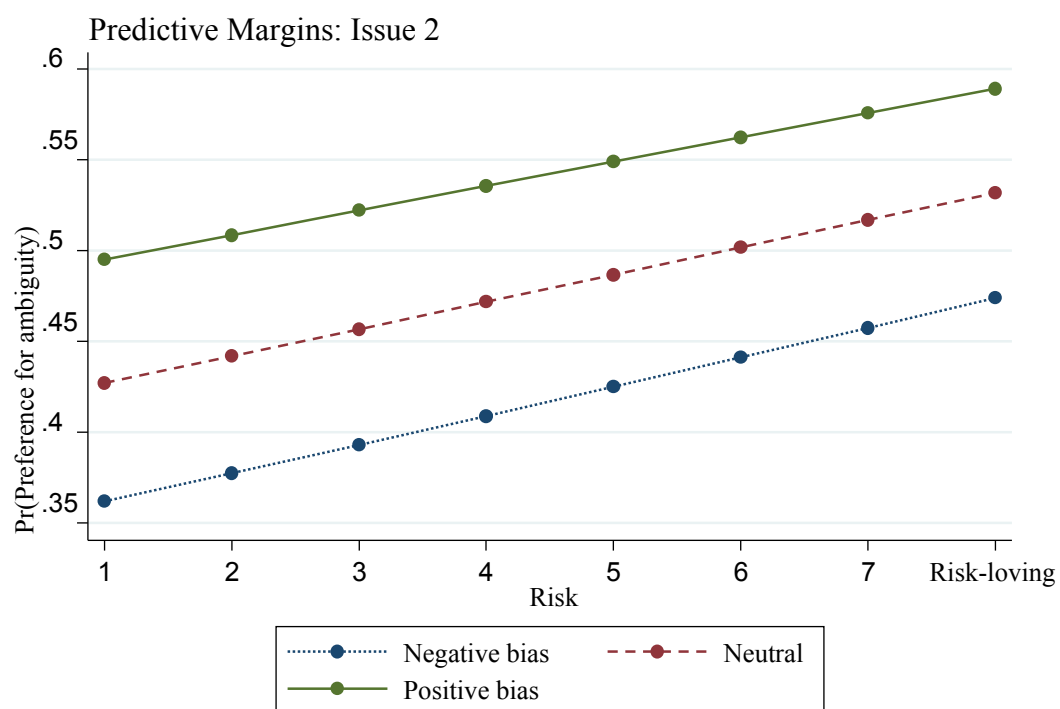
*** p<0.01, ** p<0.05, * p<0.1

When we introduce the effect of projection bias, we observe a positive and significant effect for all political issues (Columns (2), (5) and (8) in Table 3.4). This combined with the finding that risk attitude does not influence voter's preference for ambiguity gives support for our Hypothesis 2a and 2b even when we include all voters in Group II. However, the size of the coefficients is smaller than for Group I.

Adding the interaction term “Projection bias * Risk attitude” produces a significant coefficient only for the social left/right issue. Figure 3.7 plots the interaction graphs.

Figure 3.7: The interactions graphed (Group II)





The interaction graph for issue 1 group II resembles the one of group I. The marginal effects (plotted in Appendix 3.3), however, show it is only significant at low levels of risk.²² This would mean that when facing issue 1, at low levels of risk a negative projection bias would increase the preference for ambiguity and a positive bias would reduce this preference. This goes against our reasoning, and partially H1. When comparing the interaction graphs of issue 2 and 3 for group I, we see quite some discrepancies. The marginal effects (plotted in Appendix 3.3), however, reveal that in both cases the effects are insignificant.^{23 24}

We can summarize our results as follows (see Table 3.5): H1a and H1b are confirmed. Projection bias clearly impacts the preference for ambiguity as hypothesized as we can see in column 2 and 4 of Table 3.5. The results for H2a and H2b are a bit mixed. For the social left/right issue (issue 1) and the pro-/anti- European integration issue (issue 2), the interaction effect between risk and projection bias is significant and mostly in line with our hypothesis (despite the effect arising at issue 1 for very low levels of risk). For issue 2, however, the economic left/right issue, the effect of projection bias seems to be crowded out by risk attitude. Here the results are not supporting H2a and H2b. Therefore, H2a and H2b are only partially supported. H3a and H3b are rejected, as we only find evidence for one issue.

22	At risk is 1:	Prob > chi2 =	0.0868
	At risk is 4:	Prob > chi2 =	0.1174
	At risk is 6:	Prob > chi2 =	0.1070
23	At risk is 1:	Prob > chi2 =	0.9669
	At risk is 4:	Prob > chi2 =	0.9545
	At risk is 6:	Prob > chi2 =	0.9466
24	At risk is 1:	Prob > chi2 =	0.9726
	At risk is 4:	Prob > chi2 =	0.9731
	At risk is 6:	Prob > chi2 =	0.9735

Table 3.5: Summary results

	<i>Group I: Scenario 3&4</i>		<i>Group II: Scenario 1,2,3 &4</i>	
	<i>Projection bias</i>	<i>Projection bias * risk</i>	<i>Projection bias</i>	<i>Projection bias * risk</i>
<i>Issue 1</i>	+	+ (- at beginning)	+	+ (- at beginning)
<i>Issue 2</i>	+	-	+	No significant result
<i>Issue 3</i>	+	+	+	No significant result

Discussion

Contributions and implications

Above, we provide evidence for the claim that voters' preference for ambiguity is influenced by positive and negative projection biases, independently of voters' risk attitude – a claim that is in line with the theoretical predictions of Jensen (2009) and Callander and Wilson (2008), which developed mathematical models explaining the influence of a projection effect on preference for ambiguity. To achieve this, we conducted an experiment with 300 participants and three political issues, using real money prizes and an improved measurement of risk attitude, and controlling for cleavages effects. We do so with Dutch participants from the multi-party and low party affiliation system in the Netherlands.

At low levels of risk tolerance at the social left right issue we find a noteworthy result as the graph crosses at this point, revealing significant opposing results below this intersection for group I as well as group II. A potential explanation is that people with an extreme aversion for risk potentially go for the precise candidate despite of a positive bias (risk being the dominant

variable). An indication of a higher likelihood for the ambiguous candidate to choose a position closer to the voters preference (positive bias) does not take away the potential probability of the opposite to happen, hence the preference for an precise candidate despite a positive bias. However, this would have predicted an insignificant interaction effect at low levels of risk tolerance and not the effect we have found, where a positive bias results in a lower preference and a negative bias in a higher preference for ambiguity. We cannot find a potential explanation for this effect only arising at issue 1 at low levels of risk tolerance.

Some of the results are not in line with our hypothesis, for example the results for issue 2 where we find an interaction graph claiming the opposite of our hypothesis. Our descriptives have shown that some voters even prefer an ambiguous position when the precise is closer (see Table 3.2), which seems to be odd at first sight. One potential explanation might be that these voters consider some positions as contradictory to his/her own positions even though they are closer than the other alternative. For instance, If we consider the neutral point as a barrier between contradictive positions, then a voter may be willing to choose only those positions that are in the same side of his/her own preferences. This could have been the case for issue two, explaining our opposing results when analyzing the interaction effect between projection bias and risk on preference for ambiguity. Therefore we generated a dummy variable “positional switch” where the value 1 is given when $|v_0+u_0| < |v_0|$. We expect this variable to be negative related to preference for ambiguity as a value of 1 means that the ambiguous option is on the opposite side of the neutral position. We reran our analysis including this variable. Including this variable into model 2, 5 and 8 (group I) we find a positive highly significant relationship on preference for ambiguity for issue 1 (with a p value of 0.000), which we cannot explain, and a negative significant relationship for issue 3 (with a p value of 0.095). For issue 2 however this

variable is omitted from the analysis as it seems to perfectly predict the preference for an ambiguity, in line with the result of issue 3 a negative relationship is found. In our quest to understand the found effect for issue 2 we also reran the analysis by including this variable in model 6 (group I), but again the variable is omitted. After analysis it turns out that only in 2 out of the 111 observations the variable is 1 (the remainder it is 0) making it an unreliable variable to add in this model. The opposing results found for issue 2 in model 6 therefore cannot be explained by this “positional switch effect”.

Theorizing about the results for issue 2 we came to another potential explanation. When a voter has no projection bias, a risk lover will be more inclined to vote for an ambiguous candidate than a risk-averse person. When a voter has a negative bias, the difference between the preference of the risk-loving and risk-averse voter will increase, as the risk-averse person will be even less inclined to vote for an ambiguous candidate. The bias in this situation acts as a moderator on the relationship between risk preference and preference for ambiguity, and would explain the neutral bias and negative bias lines in the interaction graph. The positive bias graph is not explained with this reasoning.

For the social left/right and anti/pro-European issues, we find that voters with a positive projection bias favor ambiguity even when they are risk-averse, and that voters with a negative projection bias opt for precision even when they are risk-loving. For the economic left/right political issue, we observe that sufficiently risk-loving voters reveal a preference for ambiguity even when they have a negative bias toward that candidate. The result for the economic left/right political issue can be interpreted with reference to the asymmetric effect of positive *vis-à-vis*

negative projection biases (Krosnick, 2002) and intensity of preferences (Aragones & Postlewaite, 2002). Below, we explore both possible explanations.

Asymmetric effects

In his excellent review of the literature regarding perception of voters' political attitude, Krosnick (2002) argues that scholars have found evidence for asymmetric effects when evaluating a political position: "Although people clearly prefer to agree rather than disagree with others they like, they are not as concerned about disagreeing with others they dislike [...] positive projection onto liked candidates will be a stronger and more common process than negative projection onto disliked candidates" (Krosnick, 2002, p.119). In our case, this logic implies that we should expect no differences in voter's preference for ambiguity between voters with neutral and negative bias. In post hoc analyses (available upon request), we compared the coefficients of the dummies for positive, negative and neutral biases. The effects are only significant for voters with positive bias, implying that there are no differences in voter's preference for ambiguity between voters with neutral and negative biases. However, for the economic left/right issue, we observe that risk attitude still has an impact on voters' preference for ambiguity, which cannot be explained by the asymmetry argument. Given that our experiment does not have a sample size large enough to test the asymmetric effect claim (we only have 53 cases of negative bias for Scenarios 3 and 4 spread over three issues) and our experiment has not been designed to test this theory, the above results should only be considered as an indication of the possible presence of asymmetric effects. One additional aspect that has to be considered while analyzing the asymmetry hypothesis is suggested by cognitive consistency or dissonance theories. On the one hand, people only distort their view of the position of a disliked candidate if they otherwise have to agree with the candidate's policy. They do this by

subjectively relocating that candidate further away from their ideal position. On the other hand, people who dislike a candidate they disagree with have no reason to distort their perception of this candidate's position (Krosnick, 2002). However, empirical evidence regarding such negative projection bias effects is still missing. This should be addressed in future research.

Issue-specific effects

The other possible explanation for findings regarding the economic left/right issue is that issue-specific effects influence voters' preference for ambiguity. Aragonès and Postlewaite (2002), for example, argue that intensity of preferences could explain this. If voters policy preferences are intense, implying that the utility of their preferred policy is much larger than that of any other alternative, then those voters prefer the ambiguous candidate when they believe that their preferred policy has at least some chance to be implemented. The distribution of voters' preferred policy positions for the three different political issues (available upon request) reveals that the economic right/left issue is associated with clear polarization within our sample. This can be an indication of high preference intensity, which offers a possible explanation for the fact that risk-loving voters prefer the ambiguous candidate even when they have a negative bias towards that candidate. The attributes that characterize voters with intense preference and how such intense preferences are related to risk attitude and ambiguity preference for ambiguity are issues that have to be addressed in future research. One way to look at these issue specific effects is by examining the potential underlying identifications. The effect of the issue is conditional of the strength of the identification with an underlying identification entity, a perspective taken in Chapter 5 to examine the preference or disfavor for ambiguity.

Appendix 3.1 Relevant Survey questions²⁵

Intensity of religion (five point Likert scale):

In my life, I experience the presence of the Divine (i.e. God)

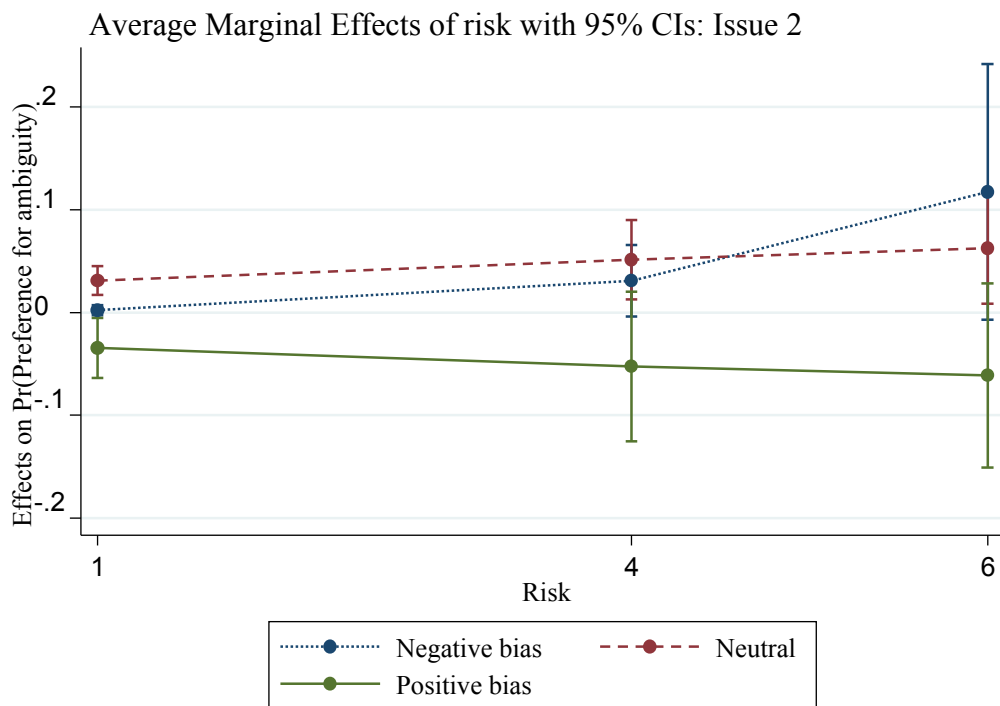
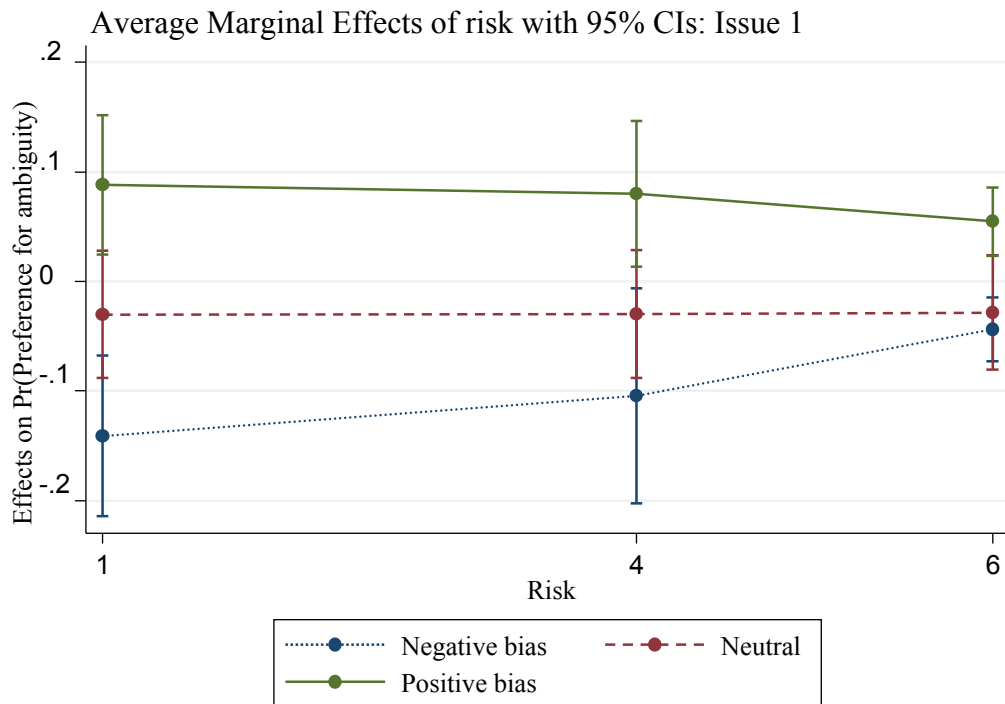
My religious beliefs are what really lie behind my whole approach to life

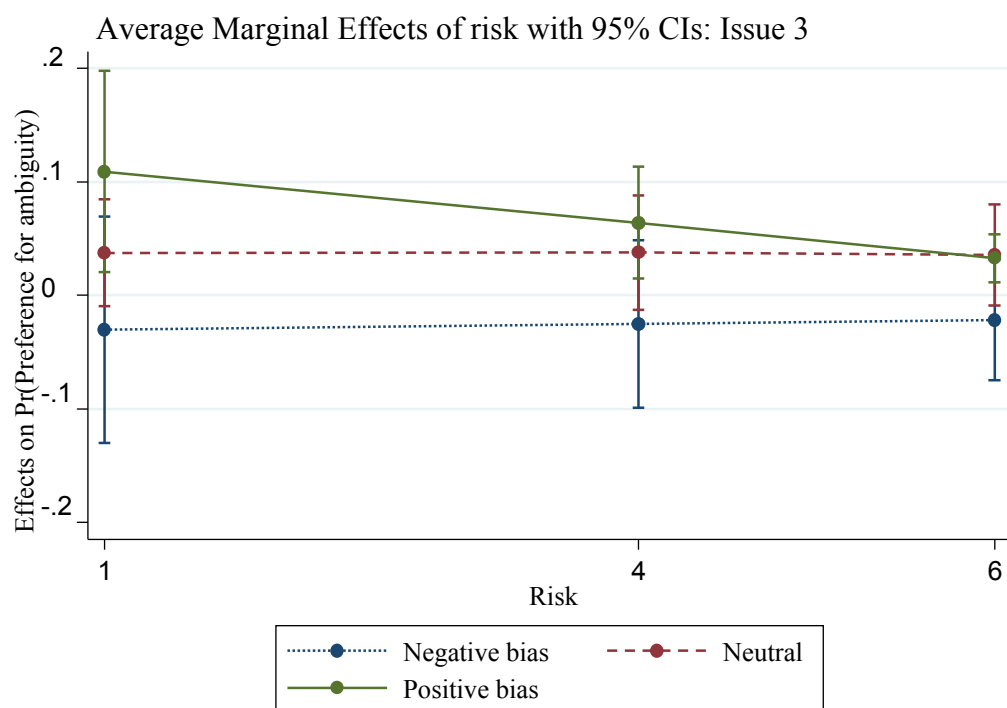
I try hard to carry my religion over in to all other dealings in my life

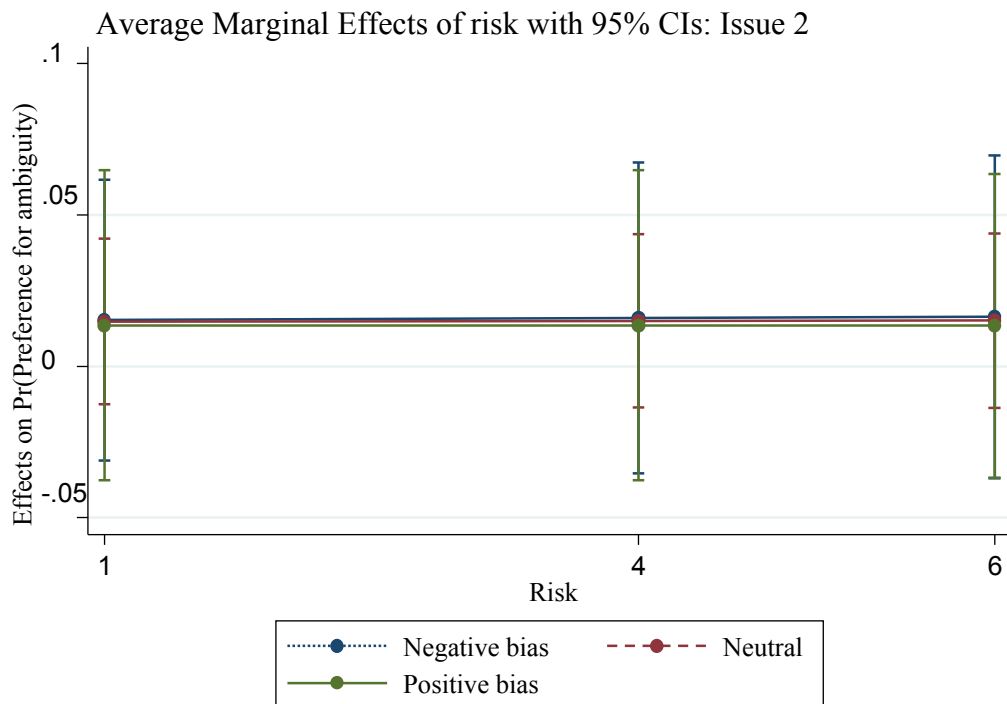
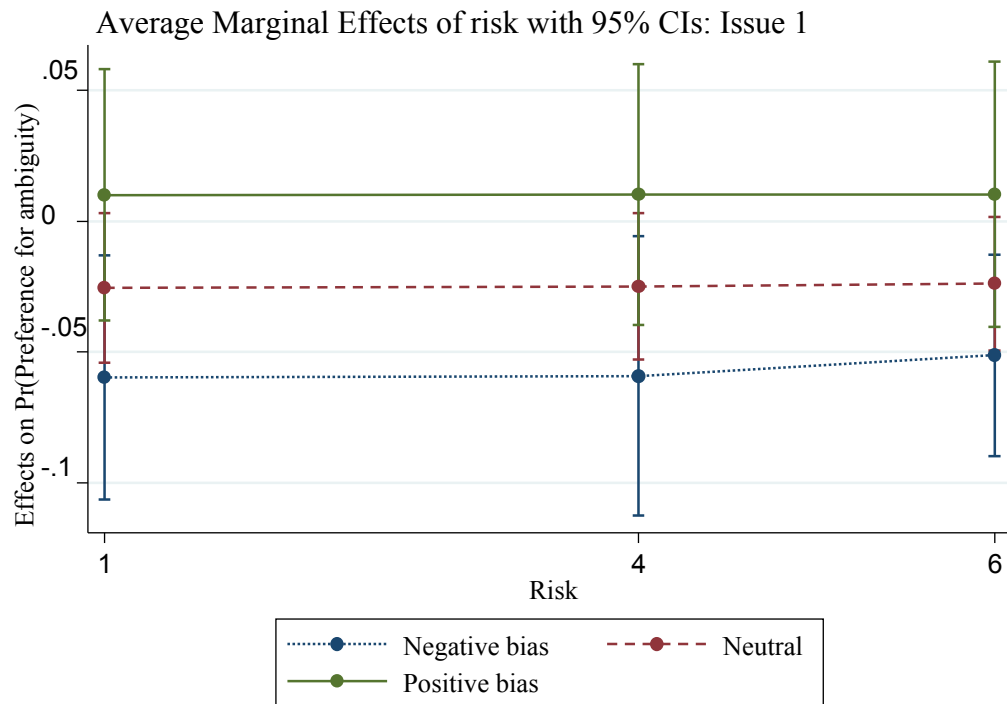
Importance of the issue:

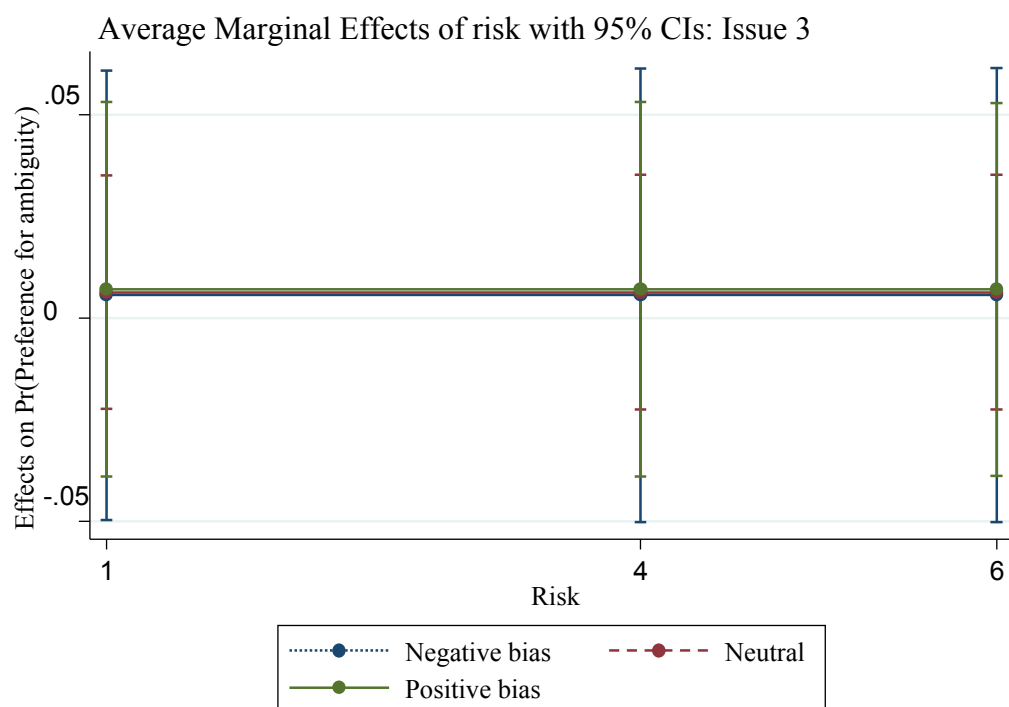
On the scale of 0 to 4 (0 being totally insignificant and 4 being extremely important) how important is this issue for you?

²⁵ These are the remaining relevant items from a larger questionnaire, which have not been given in the text.

Appendix 3.2 The marginal effects - group I



Appendix 3.3 The marginal effects - group II



Chapter 4

Organizational identification and task autonomy: Complementary or competing factors?^{26 27}

Abstract

A conceptual model is developed in order to gain more insights into task autonomy and organizational identification, and to discuss the possibility of the two producing an interaction effect on job satisfaction. Our hypotheses are based on the literature on identification, mainly originating from social identity theory and self-categorization theory. We study task autonomy in relation to organizational identification for several reasons. One reason is the popularity of both concepts, and the consensus argument that both are good for employees' satisfaction. The second reason is the lack of papers that examine both concepts in tandem. A third reason is the implicit contradictory tension between the two concepts: As task autonomy promotes the employee's withdrawal from the boundaries of the organization, organizational identification seems to promote the very opposite. We have data from a police force in Belgium. A sample of 94 respondents participated in our survey study. Results suggest a negative interaction effect between task autonomy and organizational identification.

²⁶ The authors would like to acknowledge Composite, as this research is partially funded by the European Committee in the context of the Composite project.

²⁷ This chapter is the result of joint work with Arjen van Witteloostuijn.

Keywords

Task autonomy, Organizational identification, Job satisfaction, Professional identification, Policing

Highlight

- A significant negative interaction effect between task autonomy and organizational identification is found and thoroughly discussed.

Introduction

Job satisfaction is an often-studied outcome variable in the management literature as it can be used to predict key aspects of organizational behavior. Three principal ways of thinking explain this relationship: social exchange theory (in line with social contract theory), the job demands-resources model, and insights from a series of social psychological experiences (Bateman & Organ, 1983). Social exchange theory (Adams, 1965; Blau, 1964) and social contract theory (Keeley, 1988) show how people adapt and cooperate to achieve mutual benefits (Clarke, 1996). Both explain how people (given certain conditions) give back to those who benefit them (Thompson & Hart, 2006). As job satisfaction can be viewed as a result of organizational efforts, an employee who is satisfied might want to reciprocate with a positive contribution to the organization. Second, the job demands-resources model underlines how job demands (decreasing employees wellbeing) and job resources (increasing employees well-being) should be balanced (Bakker & Demerouti, 2007). Job satisfaction can only be achieved when a balance between these two exists. Third, social psychological studies (Rosenhan, Underwood, & Moore, 1974) have shown that people have a tendency to do good when they are in a good mood or in a positive affective state. As job satisfaction reflects this positive mood/ state, it can be expected that people who have a high level of job satisfaction will display more positive behavior towards the organization.

In the literature on job satisfaction, task autonomy and organizational identification have both been acknowledged as main drivers of job satisfaction (amongst others Acorn, Ratner, & Crawford, 1997; Dick van et al., 2004; Hackman & Oldham, 1980). Literature so far has revealed a positive relationship between task autonomy and job satisfaction, as well as a positive relationship between organizational identification and job satisfaction. However, the interplay of

organizational identification and task autonomy in the context of the explanation of job satisfaction is an underexplored issue that will be addressed in this chapter. It is important to comprehend these potential interaction effects not only because they are theoretically interesting, but also because they have serious implications for practitioners. Studying the theoretical interaction between task autonomy and organizational identification based on social identity theory adds to our understanding of attitudes and behaviors in workplaces – specifically, in our case, to our understanding of the organizational antecedent job satisfaction.

Studies combining insights on organizational identification and task autonomy are scarce, but the ones that do exist are interesting in what they reveal. For example, Kaufman (1960), studying forest rangers, theorizes how task autonomy and organizational identification might be conflicting concepts. He argues that autonomy may lead to conflict between individual members in their pursuit of goals, hence threatening unity and organizational identification. He does not find evidence for this conflict, but he does reveal a positive effect with high levels of both task autonomy and organizational identification, as the negative effect, so he reasons, is moderated by specific organizational factors decreasing the tension. In a more recent study, (Tangirala & Ramanujam, 2008), focusing on employee voice, find that where there are low levels of control, organizational identification has a different impact on individuals than when there are high levels of control. So, both studies hint at a complex interaction effect between task autonomy and organizational identification, which requires further examination.

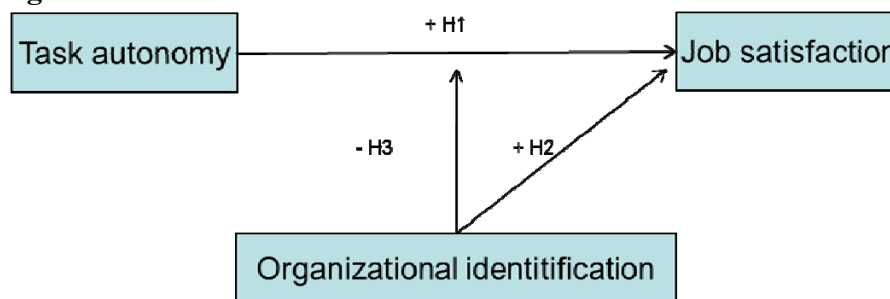
We first develop theory, and then test for the effect of task autonomy and organizational identification in isolation and in tandem on job satisfaction. It is simple and intuitive to argue that both task autonomy and organizational identification have a positive effect on job satisfaction. H1 and H2 are in line with prior finding and have a replication value. More novel,

based on the literature, we build theory supporting a negative interaction effect. In so doing, our contribution is threefold. First, we obtain deeper insight into a pair of organizational antecedents of job satisfaction by reviewing literature on task autonomy and organizational identification, mainly focusing on the organizational identification literature, as this is a newer area of research. Second, we develop novel theory regarding an interaction effect of task autonomy and organizational identification on job satisfaction. In all, we will develop three hypotheses. Third, we test our hypotheses empirically with survey data collected in a Belgium (Flemish) police forces, resulting in a dataset of 94 respondents.

Theoretical background

In line with this thesis' overall focus on examining cognitive processes, we study identification in an organizational context, moving outside the lab. By positioning this concept in an organizational setting, we also aim to develop a few practical insights as well (see the Discussion). Our theoretical framework consists of three main variables: namely, organizational identification, task autonomy and job satisfaction. We study the primary relationship of task autonomy to job satisfaction. We focus on the role of organizational identification in this relation, both as a main effect and as a moderator, as pictured in Figure 4.1.

Figure 4.1: Theoretical Framework



Job satisfaction has been and still is a popular outcome variable in the literature. It is defined as a “pleasurable or positive emotional state resulting from appraisal of one’s job or job experience”

(Locke, 1976, p.1300). It is often used as a soft performance indicator. For instance, it has been negatively related to turnover of personnel (Mobley, 1977) and to absenteeism (Scott, 1985), and positively to organizational citizenship (Organ, 1988). Furthermore, employees happy in their job are more likely to be satisfied with their lives in general (Judge & Watanabe, 1993). It is important for employers to understand the factors that affect employees' job satisfaction, as their human capital often is a crucial – if not their most important – resource (DeCarlo & Agarwal, 1999).

Task autonomy has been identified as an important organizational variable by numerous scholars (Breugh, 1985). In team research literature, especially, it has been (and still is being) referred to as an important topic during the past two decades, at least (Cohen & Bailey, 1997; Langfred, 2005, 2007; Molleman, 2000; Rico, Molleman, Sánchez-Manzanares, & Van der Vegt, 2007). It has been directly linked to job satisfaction, being regarded as one of its main determinants (Acorn, Ratner, & Crawford, 1997). Task autonomy enriches the job as it makes room for personal achievement, recognition and growth (Loher, Noe, Moeller, & Fitzgerald, 1985). Increased flexibility brings about more freedom for the employee in deciding how to perform the job (Morgeson, Delaney-Klinger, & Hemingway, 2005), thereby indirectly increasing performance (Morgeson et al., 2005). Task autonomy is positively related to employee performance, work satisfaction, and job involvement, and negatively to absenteeism (Breugh, 1985). The relationship between task autonomy and job satisfaction has been studied extensively in previous research. Although not all results are exactly in line, there is general agreement supporting a positive relationship between the two (Spector, 1986). However, as far as we are aware, including a moderating effect of organizational identification is new.

Organizational identification is fairly central to the study of organizational behavior, and has been attracting more and more attention in the management literature (Prieto, 2010). Its new popularity in the management literature is due to the fact that organizational identification is a “key psychological state” that focuses on the relationship employees have with their organization (Prieto, 2010). Therefore, it can potentially explain – and maybe even predict – the attitudes and behaviors of employees (Edwards, 2005). As with task autonomy, organizational identification has been recognized as another main driver behind commitment, involvement and investment in the organization (Prieto, 2010). The concept has been positively linked to job satisfaction (amongst others Dick van et al., 2004; Knippenberg van & Schie van, 2000).

Three hypotheses

The relationship between task autonomy and job satisfaction

People cannot be effective if they do not find their work motivational (Hackman & Oldham, 1980; Janz, Colquitt, & Noe, 1997). Task autonomy is a common way of achieving this motivation (Janz et al., 1997). Hence, this variable is included in many models that seek to explain team or individual employee effectiveness. As already mentioned, task autonomy has been positively linked to performance (Morgeson, 2005). The increased flexibility that comes with task autonomy gives employees more freedom to perform their job (Morgeson et al., 2005), which increases problem ownership (Morgeson, 2005) and motivates employees to learn how to carry out more tasks (Morgeson et al., 2005). It also motivates employees to search for solutions inside as well as outside their own team, which will result in collaboration and knowledge sharing (Cabrera, 2006; Srivastava, Bartol, & Locke, 2006). At the same time, these employees

become more proactive, therefore requiring less managerial input and less monitoring (Morgeson, 2005).

Most research seems to agree that task autonomy increases the employees' feeling that their efforts are directly related to the outcome of the job (Evans, Kiggundu, & House, 1979). It is exactly this personal responsibility that is expressed in a more positive attitude or behavior on the part of the employee towards his or her job (Hackman & Oldham, 1976). Employees are expected to be more satisfied and work harder when they perceive themselves to have task autonomy (DeCarlo & Agarwal, 1999). In general, task autonomy is seen as a desirable job characteristic, and is therefore positively related with job satisfaction (Ugboro & Obeng, 2000). So, in line with existing literature, we hypothesize a positive linear relationship between task autonomy and job satisfaction.

Hypothesis 1: Task autonomy is positively associated with job satisfaction.

Organizational identification and job satisfaction

The concept of identification has been mainly conceptualized from the perspective of social identity theory (SIT) and its extension, self-categorization theory, and to a lesser extent from that of identity theory, which is rooted in structural identity theory and identity control theory (Ashforth et al., 2008). Identity theory involves explaining individuals' role-related behaviors (Hogg et al., 1995). It is focused on the self, and how the self is attached to the meaning people give to the different roles they typically play in societies (Stryker & Burke, 2000). The self is multifaceted, as each individual has an identity for each of these roles.

Social identity theory confirms the view of a self that is composed of multiple identities (Hogg et al., 1995), but stressing social categorization rather than roles, attempting to explain

group processes and intergroup relations (Hillman et al., 2008; Hogg et al., 1995; Pratt & Foreman, 2000). This social categorization serves two purposes for people. People have a need to structure and order their social environment (Ashforth & Mael, 1989; Tajfel & Turner, 1979). This helps them to define others. The prototypical characteristics of the category are transferred to the person who is in this category, regardless of whether or not this stereotyping is reliable. The second function is to help people to define themselves in this social environment as well (Ashforth & Mael, 1989; Tajfel & Turner, 1986). The characteristics of the group give the members insights into who they are. Social identity theory suggests that this identification results from people having a need to fulfill some of their basic needs. Most prominently, the importance of self-evaluation (Hogg & Mullin, 1999) and the basic human need for positive self-esteem (Hogg & Terry, 2000) have been emphasized here. Self-categorization theory focuses on cognitive processes, instead of motivation, but there are motives implicit in self-categorization: uncertainty reduction (Hogg & Mullin, 1999) or a need for safety and affiliation (Ashforth et al., 2008).

Since individuals can identify with different groups, organizational identification can be viewed as a specific type of social identification (Ashforth & Mael, 1989). Organizational identification is often explained by drawing on social identity theory to clarify the distinction between organizational commitment and internalization (Ashforth & Mael, 1989). Organizational identification is defined as the cognitive construct in which an individual perceives his or her identity to be intertwined with an organization (Ashforth & Mael, 1989; Dutton, Dukerich, & Harquail, 1994). The degree of organizational identification is dependent on the extent to which the employee defines his or herself by the same attributes as he defines the organization (Dutton et al., 1994). The most frequently used definition that captures the concept

of organizational identification is that of Albert and Whetten (1985). They claim that “Organizational identification involves those aspects of the organization that meet the criteria of self-referentially claimed central character, distinctiveness, and temporal continuity” (Albert & Whetten, 1985, p.256).

With this definition, they claim that organizational identification is derived from the organization’s characteristics that are perceived by its members as being central, distinctive, and enduring (Dutton et al., 1994; Kroon, Noorderhaven, & Leufkens, 2009; Pratt & Foreman, 2000). How attracted they are to the organization depends on the level of distinctiveness the organization delivers, to what extent their self-esteem is enhanced, and “how well the image preserves the continuity of their self-concept” (Dutton et al., 1994, p.239). Identification with the organization is a key element of the self to be examined, as people often derive a sense of identity from their organization or profession that is stronger than identity based on gender, race, age, ethnicity or nationality (Hogg & Terry, 2000).

In earlier work, we have seen that the strengthening of organizational identification positively effects attitudes and behaviors in terms of commitment (Foreman & Whetten, 2002), and cooperation and citizenship (Dutton et al., 1994). Moreover, staff turnover is reduced, since employees will have an intrinsic desire to remain with the organization (Hillman et al., 2008) as the organization becomes part of the self. The stronger the identification with the organization, the more the values of the organization are incorporated into an employee’s self-image, and the more this employee will act on behalf of the organization, as the employee will try to preserve and enhance the concept of his or herself (Dick van et al., 2004). In this identification process, the very organization becomes part of the self (Knippenberg van & Schie van, 2000). The incorporation of the organization’s identity into the employee’s self reduces the chance of

alienation, and can therefore be seen as an important determinant for job satisfaction (Prieto, 2010).

Three arguments can explain this positive relationship between organizational identification and job satisfaction. The first argument is related to the content of the job. Although the organization is a different concept from the task, there can be overlap between the two. The concept of the job will at least partially be dependent on the values of the organization, or will have characteristics in line with the organization (Dick van et al., 2004). As these characteristics or elements of the job correspond with the values of the organization with which the employee identifies, they will positively impact job satisfaction. Employees will value the job more positively, since the job is consistent with the organization with which they identify. Second, the job is proof for the employee that s/he is a member of the organization. Employees with a strong identification will therefore value this membership (Dick van et al., 2004). A third argument flows from the observation that job satisfaction is a perception. Employees having a strong identification with the organization are believed to have a more positive perception of their work (Dick van et al., 2004). These employees “view their workplace in a favorable light and might overlook or tolerate some personally dissatisfying aspects of their jobs” (Tangirala & Ramanujam, 2008, p.1192). Van Knippenberg and Van Schie (2000) have found a plausible psychological explanation for this, suggesting that people have the tendency to evaluate more positively those objects that are associated with the self (Beggan, 1992).

Hypothesis 2: Organizational identification is positively associated with job satisfaction.

Task autonomy and organizational identification, and job satisfaction

To the best of our knowledge, to date, the interaction effect between organizational identification and task autonomy on job satisfaction has not been explored. It remains unclear if the effect of task autonomy on job satisfaction is strengthened or weakened by organizational identification, and vice versa. On the one hand, identification can act as a buffer for the negative effects of low task autonomy that are often detrimental. They can be associated with stress (Ducharme & Martin, 2000; Pearson & Moomaw, 2005) and even psychological harm (Sparks, Faragher, & Cooper, 2001), and with decreasing job satisfaction. The literature has revealed that how individuals appraise stressors, and how coping with stressors is influenced by social identity (Haslam, 2004). Organizational identification can therefore aid in reducing the stress caused by low levels of task autonomy (Wegge, Van Dick, Fisher, Wecking, & Moltzen, 2006) by acting as a buffer.

When employees experience low task autonomy in their job, high identification with the organization is able to reduce the negative effects of this low task autonomy, leading to high job satisfaction. This moderation effect will decrease the difference between job satisfaction in cases with low versus high identification, therefore predicting a negative interaction effect. This proposed effect is in line with findings of Schaubroeck and Jones (2000). They report evidence for this buffering effect in their study of the impact of stress on physical wellbeing. Their results show that positive emotions are related to positive health symptoms only in situations with low identification. With high identification, this effect cannot be observed, supporting the buffering mechanism argument.

Alternatively, we can expect a substitution effect to occur. The combined stand-alone effects of task autonomy and organizational identification on job satisfaction are not likely to be equal to or higher than the combined effect of both characteristics altogether. The level of job satisfaction that can be achieved is not infinite: when the glass is full, it is full. This substitution or saturation effect can be seen throughout the literature. The saturation effect is described as an optimal ceiling point at which saturation is achieved. Beyond this ceiling, positive effects are smaller or can even turn negative (Shaw, 1955).

Hypothesis 3: Organizational identification dampens the relationship between task autonomy and job satisfaction.

Method

Data gathering and sample representativeness

We conducted a few exploratory interviews in five police forces to develop a better understanding of the police organization and the police profession. Based on these insights, a survey was developed. We sent out this survey to a local police force in Flemish Belgium. This local police force at that time had 265 employees, comprising 84 women and 181 men. Only 239²⁸ were active employees and it was to this active group that we sent our survey. The survey was administered on paper and not digitally, as not all employees had direct and easy access to the Internet. Confidentiality was ensured. This questionnaire was emailed to our contact person at the police force who made sure that each member of the organization received a copy. We attached return envelopes to the survey documents, to guarantee confidentiality. All data were collected in a period of two weeks, ensuring that the organization was not subject to major change in the period of measurement.

²⁸ Employees who were absent due to sabbaticals, pregnancy leaves or long-term sickness were excluded.

Ninety-three respondents filled out the entire survey, implying a response rate of more than 40 per cent, which is rather high. We examined the representativeness of our sample by comparing the sample to the entire membership of our police force. We have data on one of six of our control variables for all non-respondents, namely gender. In our sample, we had 19 women and 66 men, and 8 respondents who left this identifier open, resulting in a slight over-representation of males.

Questionnaire

Organizational identification was measured using a scale developed by Mael and Ashforth (1992). This is one of the most-used measurement instruments in the literature, and proven to be highly valid and reliable (Mael & Ashforth, 1992; Mael & Tetrick, 1992). It consists of six questions, which have all to be answered through a five-point Likert scale. Our scale has a Cronbach's alpha of 0.827.

Job satisfaction was measured with the well-established scale taken from Tsui, Egan, and O'Reilly (1992). This scale comprises six questions, which too have to be answered on a Likert scale ranging from 1 to 5. The item "How satisfied are you with the salary you receive" turned out not to correlate well with the other items, barely meeting the requirement of the corrected item-total correlation, with a coefficient of 0.31. Following Richard, Barnett, Dwyer, and Chadwick's (2004) cut-off rate of a minimum of 0.4 for the loading factor, this is too low. Although all items did load onto one dimension, a factor analysis revealed that this item was an outlier. It makes sense that this item is not a good measurement of job satisfaction, given that the data is collected from a police force. Our interviews with police officers revealed that employees of a police force tend to opt for this occupation at young age and for life, either in line with their vocation, or because they felt that they had the skills for the job or that they had limited

experience and education to pursue another type of job. This severely limits their career opportunities outside policing. Each force has the same fixed salary scales, and salaries for the same job do not really differ between police forces. As employees see their salary more as a given, we removed this item from the job satisfaction scale. This increased the Cronbach's alpha to just over 0.66, which is close to the standard rule of thumb of 0.7. The corrected item-total correlation for our new job satisfaction variable is between 0.33 and 0.66.

Our measure of *Task autonomy* focuses on the perception of the employees. This is in line with previous research, following the reasoning of Hackman and Lawler (1971) (Breaugh, 1985). They argue that not the objective state of the employees influences their attitudes and behaviors, but rather how they experience this state subjectively. The actual degree of task autonomy is not relevant as it is the employees' perception of task autonomy that will trigger their responses. The actual objective extent of discretion can be rather discrepant vis-à-vis the employee's subjective perception (Nicholson, 1984; DeCotiis and Koys, 1980). Task autonomy was measured with a four-point Likert scale, following Patterson (2005). This scale consists of five items, from which three are keyed reversely to decrease the acquiescence bias in the responses. The five items were separated in the survey to reduce the likelihood of respondents guessing the relationship between the dependent and the independent variables. We checked the reliability of the scale. With Cronbach's alpha at 0.712, the measure is reliable.

Finally, we included a set of control variables. Age is a standard control variable in the job satisfaction literature, believed to have a linear relationship with job satisfaction (Warr, 1992). *Age* is measured by distinguishing between 5 categories. The first category entails policeman who are younger than 25 years old. The second category includes the ages 36 to 35 years old. The third consists of the ages of 36 and 45 years old. The fourth, the ages between 46

and 55 years old. The fifth and final category is for policeman over 55. As age and tenure are natural interdependent (Bedeian, Ferris, & Kacmar, 1992), tenure is a common control variable in the job satisfaction literature as well. Moreover, tenure is related to identification (Fiol, 2002). *Tenure* was measured in categories: 1 = less than 6 months; 2 = 6 months to 1 year; 3 = 1 to 3 years; 4 = 3 to 5 years; 5 = 5 to 10 years; and 6 = more than 10 years. This was done for tenure in the force, department and position. Moreover, gender as well as highest education are included, as women and highly educated people tend to reveal higher degrees of identification. *Gender* is a dummy variable (0 = male, and 1 = female). Highest *Education* is included as a categorized variable: 1 = elementary school; 2 = high school / secondary education; 3 = intermediate vocational education; 4 = higher vocational education; and 5 = (post) university. Category 2 is the reference category as most employees are in this category.

Belgian police context

In our setting, police forces are an interesting and appropriate research setting. Research on job satisfaction in policing is relatively new compared to similar research in other professions (Zhao, Thurman, & He, 1999). In the last few decades, insights from social sciences have helped the prevention of crime by focusing on fieldwork in policing, but federal funding for policing has been decreasing (Sherman, 2004). As a consequence, the budget constraints in policing demand a more efficient use of limited public funds, increasing the need for insights into organizational issues, including those relating to how to motivate the workforce.

There could be a concern in relation to task autonomy in this sample, as governmental services like policing are often viewed as scoring low on task autonomy. Our descriptive data reveal substantial variation regarding the task autonomy, as summarized in Table 4.1. Although police forces are largely controlled by laws and regulations, the job is varied, and personal

discretion and on-the-spot decision-making are frequently required in this type of work, especially lower down the hierarchy (which is not the case in many other types of organizations) (Goold, 2002). Because of this, task autonomy is actually one of the main explanatory variables regarding job satisfaction in policing (Zhao et al., 1999). The motivation of a police officer might not be comparable to that of employees at for-profit organizations. In our interviews, we have seen the passion and dedication expressed by our interviewees when talking about their motivation to join the police and, even after bad experiences, their conviction to not leave the force. This implies that identification is an important aspect of a police job.

Regression analysis

Data was analyzed using OLS as available in SPSS in combination with Hayes's (2012) process macro. Most respondents fully completed the survey. Missing data are not really an issue, with a few exceptions regarding identifier questions and items in larger scales: we removed the former, and corrected for the latter (taking the average per scale over the available item scores). Therefore, we did not have to remove any respondents. The descriptive statistics, as listed in Table 4.1 reveal that, in general, the respondents are quite satisfied with their jobs. There is enough variance in each variable to perform OLS. The correlation Table 4.2 shows that we do not have any bivariate correlation above 0.7, except for *Tenure department* and *Tenure position*, which we indeed expected to have a high correlation. We also run a simple regression with *Job satisfaction* as the dependent variable, and *Task autonomy* and *Organizational identification* as independent variables (including the control variables). The highest variance inflation factor (VIF) was 4.8 (tenure at force), which is below the rule-of-thumb threshold of 10, indicating absence of multicollinearity (Myers, 1990).

Table 4.1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Gender	85	0	1	0.22	0.42
Age	83	1	5	3.36	1.04
Tenure force	77	1	7	4.86	1.80
Tenure position	70	1	6	4.54	1.45
Tenure department	71	1	7	4.27	1.53
Education	80	1	5	3.05	1.09
Task autonomy	93	1.00	3.80	2.46	0.54
Organizational identification	93	1.00	4.67	3.37	0.73
Job satisfaction	93	2.00	5.00	3.74	0.55

Data was checked for missing values and wrong entries with the use of boxplots of the dependent variable (*Job satisfaction*) and the independent variables (*Organizational identification* and *Task autonomy*). The outliers were judged to be valid cases. As they are real answers, we did not omit any variables. A scatter plot (PP-plot) of the dependent variable *Job satisfaction* confirmed that we did not have a problem with the standard errors. The dots are all close to the diagonal, indicating that there are no major deviations from normality. Indeed, the histogram shows that the sample approaches a normal distribution. The residuals are evaluated graphically to make sure they are normally distributed and independent. As already indicated, we had to remove a few of our identifiers from our survey, implying that we could not link our dataset to other existing data sets within the police force.

Table 4.2: Correlations

	1	2	3	4	5	6	7	8	9
1 Gender	1								
2 Age	-.194	1							
3 Tenure force	-.174	.817**	1						
4 Tenure department	.089	.349**	.562**	1					
5 Tenure position	.045	.468**	.656**	.807**	1				
6 Education	.143	-.092	-.151	-.302*	-.310**	1			
7 Job satisfaction	.030	-.057	-.087	-.148	-.109	.055	1		
8 Task autonomy	-.048	.109	.133	.082	.041	.121	.314**	1	
9 Organizational identification	-.170	-.004	-.061	-.238*	-.121	-.049	.236*	.039	1

p* < 0.05, p** < 0.01

Because all variables are taken from the same single-respondent survey, common-method bias may arise, which might deflate or inflate the results. This is not the case here. Our model is rather complex, including a moderation effect, implying that respondents are unlikely to have had this in mind while filling out the survey (Chang, Witteloostuijn van, & Eden, 2010). Additionally, we took a few *ex ante* precautionary measures: by removing identifiers, we stressed the anonymity of the research; we used different scale endpoints for different variables; and we mixed the order of questions (Chang et al., 2010). *Ex post*, we checked the correlation of our three main variables. As the highest correlation is 0.314, we can conclude that common-method bias is highly unlikely. We also checked for common-method bias by using Harman's One-Factor test (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003; Podsakoff & Organ, 1986). According to this test, common-method bias may be an issue when a single factor emerges from the model that accounts for the majority of covariance in the variables. From the nine entered variables, four components were extracted, a single component accounting for a maximum of 33 per cent of the variance, again suggesting that common-method bias is not a worry. This component makes perfect sense as *Age*, *Tenure force*, *Tenure position* and *Tenure department* are the main determinants of this component. This cluster of variables is closely related by the very nature of the interdependencies between the variables involved, all known to have a large impact on job-related outcomes such as job satisfaction.

Results & discussion

Testing hypotheses

Table 4.3 reports the regression estimates. Our first model gives a baseline estimation with the control variables (M1).

Table 4.3: Regression analyses

	M1		M2		M3	
(Constant)	3.968 ***		2.418 ***		-0.13	
	0.36		0.561		1.184	
Gender	0.146		0.257		0.268	
	0.192		0.178		0.17	
Age	0.08		0.115		0.167	
	0.133		0.122		0.119	
Tenure force	-0.04		-0.091		-0.093	
	0.092		0.086		0.082	
Tenure position	0.019		0.008		0.001	
	0.1		0.092		0.088	
Tenure department	-0.071		-0.043		-0.059	
	0.082		0.077		0.074	
Education elementary	-0.262		-0.311		-0.372	
	0.642		0.593		0.568	
Education intermediate vocational	-0.229		-0.172		-0.164	
	0.2		0.184		0.176	
Education higher vocational	-0.164		-1.86		-0.241	
	0.186		0.174		0.168	
Education university	-0.167		-0.32		-0.344	
	0.309		0.291		0.278	
Task autonomy			0.416 ***		1.504 ***	
			0.146		0.471	
Organizational identification			0.166 *		0.86 ***	
			0.093		0.301	
Moderator Organizational identification x Task autonomy					-0.302 **	
					0.125	
R square	0.065		0.246		0.322	
Adjusted R square	-0.088		0.089		0.165	
F value	0.424		1.57		2.057	
Delta R2		0.181		0.076		

p* < 0.1, p** < 0.05, p*** < 0.01; n=94

The direct relationships predicted by H1 and H2 are tested in Model 2 (M2), including our independent variables *Task autonomy* and *Organizational identification*.

We find a significant and strong positive relationship between *Task autonomy* and *Job satisfaction*, with a p value of 0.005, in line with H1. Model 2 also clearly provides evidence for a positive relationship between *Organizational identification* and *Job satisfaction*, with a p value of 0.061, suggesting evidence in support of H2. The interaction effect is tested in our third Model 3 (M3) by including the *Task autonomy* * *Organizational identification* product term. This interaction effect is negative and significant with $p = 0.017$. This means that we find preliminary support for H3.²⁹ Table 4.3 shows that our model fit increases. By adding our variables, we improve the model fit. From Model 1 to 2, we observe an R^2 increase of 0.188. By adding the interaction effect, the model fit increases with 0.075 to an R^2 of 0.311 for our complete Model 3.

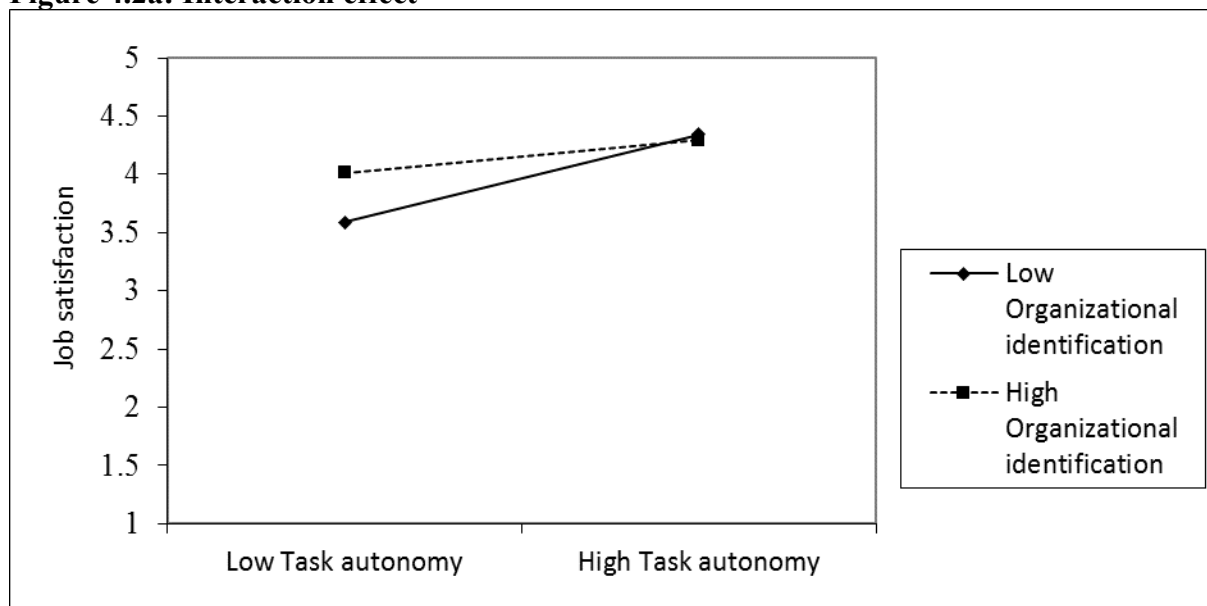
Although we have found a negative moderation effect, this does not *per se* support our Hypothesis 3. A tension between task autonomy and organizational identification could also explain this effect, instead of our hypothesized buffering effect. Such tension might arise as task autonomy, by increasing the freedom of employees, encourages employee to be focused more on themselves rather than the organization. This independence weakens the employees' strings to the organization. This effect increases the motivation and proactiveness of employees. Strong organizational identification might hinder this by strengthening the ties to the organization. Rotondi (1975) suggests that employees with high organizational identification might have a tendency to focus on control and conformity during periods of operational change. As task autonomy can be seen as a threat to unity, this (unity) is the very thing organizational

²⁹After splitting the sample into a high and low task autonomy group at the median of 2.4, we performed subgroup analyses so that all coefficients could vary across subgroups. This analysis confirmed the negative interaction effect.

identification tries to promote (Hall, Schneider, & Nygren, 1970). This potential tension would also result in a negative moderation effect on job satisfaction.

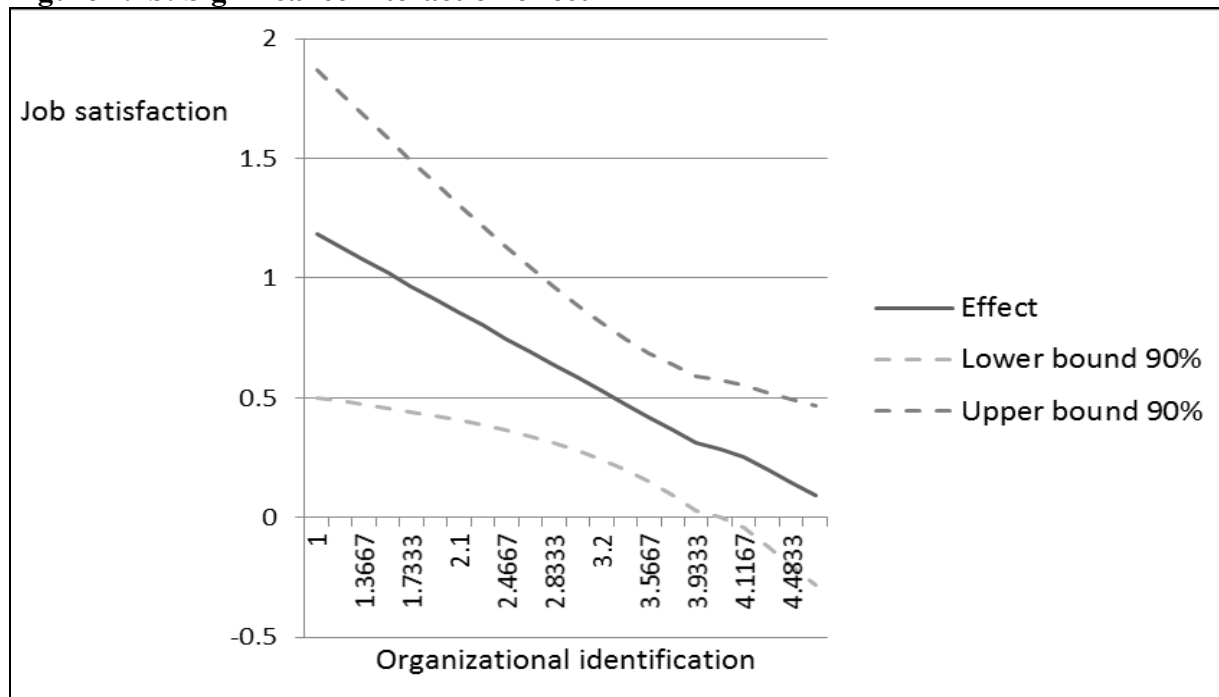
We believe this explanation to be less likely as, today, task autonomy is no longer viewed as leading to alienation and isolation (Franklin, 1988; Pearson & Moomaw, 2005). To explore this issue further, we plot the interaction effect graphically in Figure 4.2a. The interaction graph reveals that the effect of *Task autonomy* on *Job satisfaction* is positive at all levels of *Organizational identification*. Therefore, the tension effect can be excluded as a potential explanation for the negative interaction effect. Furthermore, the graph indicates that at low levels of *Task autonomy* *Organizational identification* clearly impacts *Job satisfaction*, supporting the buffering effect argument as hypothesized in H3.

Figure 4.2a: Interaction effect



Next, we applied the Johnson-Neyman technique, visualized in Figure 4.2b, to identify regions of significance of our interaction effect: i.e., to identify the ranges of Organizational identification at which *Task autonomy* has a significant effect on *Job satisfaction*. This graph reveals that the interaction effect becomes insignificant at an *Organizational identification* level of approximately 4. This means that in the cases where employees have an extremely high identification with the organization, the negative interaction effect does not exist. We do not have a valid theory-based argumentation as to why this graph becomes insignificant at this point. This may be simply related to our small sample size. This requires further research. Of our respondents, 88 per cent are in the range of significance.

Figure 4.2b: Significance interaction effect



Finally, we conducted a few robustness analyses. First, we tested for a mediation effect from *Task autonomy* to *Job satisfaction*, but failed to find any evidence for this. Second, we added a quadratic term in our analyses to explore whether the main effects may be non-linear. All squared terms turned out to be insignificant. Third, we included a measure of professional

identification. The correlation between organizational identification and professional identification is 0.664. Therefore, we examined the possibility of an interaction effect between professional identification and task autonomy. The occupation of police officer is often believed to entail high professional identification. We measured professional identification with a scale similar to that for organizational identification, following Mael and Ashforth (1992). In line with the argumentation of Haslam (2004), professional identification could also act as a buffer against stress. However, we could not find any support for this effect, probably because organizational identification and task autonomy are perceived as organizational factors and professional identification as a characteristic of the profession. Further research is necessary to examine this non-effect in greater detail.

As none of the control variables are significant in our model, and we have three on tenure, we decided to run a final robustness analysis by re-running the models including only one of the tenure variables at the time. In all three cases, we still find a significant positive effect of autonomy (ranging from 0.362 with a significance of 0.011 for tenure department, 0.381 with a significance of 0.008 for tenure position, to 0.403 with a significance of 0.031 for tenure force) as well as organizational identification (ranging from 0.183 with a significance of 0.045 for tenure department, 0.194 with a significance of 0.03 for tenure position to 0.197 with a significance of 0.031 for tenure force) on job satisfaction. The significance of organizational identification improves in all three of these models compared to our original analysis. Our control variables, however remain, insignificant. When analyzing the interaction effect excluding two out of three tenure variables, we again find results similar to our current findings. In all three cases, we find a significant negative interaction effect ranging from -0.271 with a significance of

0.031 for tenure department, -0.277 with a significance of 0.028 for tenure position, and -0.232 with a significance of 0.075 for tenure force.

Conclusion

Contributions and implications

In this study, we aim to gain more insights into the complex relationship between task autonomy and organizational identification. The intuitive, straightforward relationship of both being positively related to job satisfaction might be incorrect. Rather, in our theory, we develop an argument suggesting a negative interaction effect of organizational identification and task autonomy. Empirically, we contribute by testing this interaction effect between task autonomy and organizational identification on job satisfaction for a sample of respondents from the Belgian police. Our findings support our theory. Of course, before we can generalize this result to other contexts, our study has to be replicated with samples of other non-profit as well as profit organizations in different countries. Would our interaction effect finding turn out to be robust, then the practical implication is that investment in both organizational identification and task autonomy might not promote job satisfaction.

Of course, our study is not without limitations. A first limitation relates to our sample size and single-case design. Although we believe that we have captured the general attitude among employees in this police force, and since results are in line with findings from interviews held with several Belgian police forces, our data is limited to one police force. A second limitation involves the subjective measurement we used for task autonomy. Perceived task autonomy is an often used in the literature, as this subjective perception is argued to affect attitudes and behaviors. However, in future work, including measurements of actual task

autonomy would be interesting by way of comparison (for example Fried & Ferris, 1987). Third, in our post hoc explorative analyses, we included professional identification. Although organizational identification and professional identification are highly correlated (0.664), professional identification failed to moderate the relationship between task autonomy and job satisfaction. This stresses the importance of treating the two as separate constructs in future research.

Appendix 4.1 Relevant Survey questions³⁰

Job satisfaction (five point Likert scale):

How satisfied are you with the nature of the work you perform?

How satisfied are you with the person who supervises you?

How satisfied are you with your relations with others in the organization with whom you work- your co-workers or peers?

How satisfied are you with the pay you receive for your job?

How satisfied are you with the opportunities which exist in the organization for advancement or promotion?

Considering everything, how satisfied are you with your current job situation?

Task Autonomy (four point Likert scale):

Management let people make their own decisions much of the time

Management trust people to take work-related decisions without getting permission first

People at the top tightly control the work of those below them

Management keep too tight a reign on the way things are done around here

It's important to check things first with the boss before taking a decision

Organizational identification (five point Likert scale):

When someone criticizes my police force, it feels like a personal insult

I am very interested in what others think about my police force

When I talk about my police force, I usually say "we" rather than "they"

This police force's successes are my successes

When somebody praises this police force, it feels like a personal compliment

If a story in the media criticized the police force, I would feel embarrassed

Professional identification (five point Likert scale):

When someone criticizes my occupation, it feels like a personal insult

I am very interested in what others think about my occupation

When I talk about my occupation, I usually say "we" rather than "they"

This occupation's successes are my successes

When somebody praises my occupation, it feels like a personal compliment

If a story in the media criticized my occupation, I would feel embarrassed

³⁰ These are the relevant items from a larger questionnaire.

Chapter 5

A safe bet or everything on red: The role of European and national identification in voting³¹

Abstract

We conduct an experiment involving 300 participants in order to gain more insight into the relationship between identification and ambiguity in voting behavior. We consider political issues that trigger personal uncertainty. We examine whether voters that identify strongly with Europe or the nation-state (i.e., the Netherlands) have less willingness to accept ambiguity whilst considering political platforms. We test for moderation of salience and importance of the issue. We find limited empirical evidence that supports the idea that political issues can trigger personal uncertainty. Our empirical evidence lends support for the opposite relationship: high-identification individuals tend to prefer ambiguity. There is some evidence for the moderation effect of the importance of the issue, and no evidence for a moderation effect of salience. Our key contribution is that we combine political science and social identity theories to analyze the effect of European and national identification on ambiguity preference. Moreover, we introduce and discuss a different way to measure European and national identification, following organizational literature.

³¹ This chapter is the result of joint work with Arjen van Witteloostuijn and Gilmar Zambrana-Cruz.

Keywords

Voting preferences, ambiguity, issue competition, ambiguous voting, social identity theory, identity change, uncertainty-identity theory, personal uncertainty, fluid compensation, European versus national identity, identification

Highlights

- We combine insights from identification and personal uncertainty literatures to examine ambiguous voting behavior. Social identity theory is used to explain why people with a high degree of identification with a group or an entity are less willing to accept ambiguity whilst voting for a political party in elections.
- We find a positive relationship between national identification and precise voting when faced with the political issue of the integration of immigrants, potentially supporting the proposed role of personal uncertainty in this relationship.
- We find a negative relationship between European identification and precise voting when faced with the political issue whether to grant more or less power to the European Union.
- We find limited evidence for the moderating role of the importance of the issue on the negative relationship between identification and voting ambiguity, and no evidence for a moderating role of issue salience.
- In our analyses of voting ambiguity, we incorporated a more objective measure of risk attitude by incorporating a lottery game instead of relying on a self-reported measure of risk attitudes.
- We find evidence for issue-specific effects.

Introduction

Literature on uncertainty in elections is very broad. Scholars have explored the reasons why political parties would choose ambiguous political platforms. Aragonés and Neeman (2000), Alesina and Cukierman (1990), Meirowitz (2005) and others claim that political parties suffer from negative consequences when choosing ambiguous political platforms, but they still opt for ambiguity because those platforms give them flexibility to achieve another major political objective when they are elected. However, Tomz and Houweling (2009) find that ambiguity does not harm political parties when party affiliation is considered, and Callander and Wilson (2008) and Jensen (2009) stress that ambiguity could even be used as a strategy to increase the number of potential voters.

Voter's risk attitude is assumed to be an important driver when considering ambiguity in political platforms. While risk-averse voters would not accept ambiguity, the opposite is true for risk-loving voters (Shepsle, 1972). On the contrary, Callander and Wilson (2008) and Jensen (2009) consider that even risk-averse may well prefer ambiguous political platforms. One potential explanation for this is given in Chapter 3: projection bias. In the current chapter, we come up with an alternative explanation and claim that the decision to choose or reject ambiguous political platforms can be activated by the nature of the issue. Specifically, we examine this relationship by looking at the potential moderators: issue importance as well as issue salience.

Voting behavior, nowadays, is less dependent on the existence of social cleavages and more on the nature of the political issues (Green-Pedersen, 2007, and see Chapter 3). In this situation political parties compete according to the political stand they take on the different issues,

implying processes of issue competition and issue ownership. An issue can activate personal uncertainty when the voters feel that this issue is affecting the stability of the entity with which they identify. These voters are less willing to deal with uncertainty in political platforms, and therefore they will prefer to see a larger commitment from the politicians they choose. One way in which politicians can show their commitment to voters is by reducing the uncertainty in their political platforms, hence offering a more precise position (Frenkel, 2014). These voters will be less likely to vote for a candidate with an ambiguous position. In line with social identity theory and literature on uncertainty avoidance, we predict that a political issue can trigger personal uncertainty when voters identify with an underlying entity, making the voter less lenient toward ambiguous positions of candidates. We consider European versus national identification in combination with three political issues as drivers that trigger personal uncertainty.

Our contributions are threefold. First, we add to the limited literature in voting ambiguity by approaching the topic from an issue perspective. By combining social identity, uncertainty avoidance and personal uncertainty literatures, we seek to develop deeper insight into voting preferences. Our second contribution involves the measurement of identification. In the literature, an ongoing discussion deals with the question how to measure European and national identification. We take an often-used measure of identification from organization studies, and examine its appropriateness as a measurement for identification with Europe and the nation-state. Third, we contribute to the current discussion regarding European and national identification. The debate on the power of Europe and the identification of citizens with their own nation-state vis-à-vis the European Union has been a popular topic ever since the project of European integration began – a debate that has intensified in recent times of economic crisis.

Theoretical background

Ambiguity in voting behavior

Much research has been devoted to examine the level of ambiguity in electoral competitions (Frenkel, 2014). Literature has developed insights from a candidate's perspective and a voter's perspective. The main revelation taking a candidate's perspective can be traced back to an insight given by Glazer (1990). Glazer (1990) explains ambiguous positions of candidates as a strategy that candidates need to pursue when they are unfamiliar with the preferences of the median voter. Others have claimed that candidates prefer an ambiguous position so that voters cannot "pinpoint" the true preferences of the candidate (Alesina & Cukierman, 1990). And Aragonès and Postlewaite (2002) argue that candidates can attract more voters by being ambiguous. In their explanation, they focus on the beliefs of voters. Frenkel (2014) builds on these insights. He argues that, as standpoints are promises to the voters, the uncertainty of the candidate results in ambiguous platforms. His theory suggests that more precise standpoints signal the commitment and expertise of the candidate, so voters (being aware of this) should prefer precise standpoints over ambiguous ones (Frenkel, 2014).

The most popular explanation given from the voter's point of view relates to the risk attitude of voters. By extending Zeckhauser (1969), Shepsle (1972) explains that voters prefer precise standpoints over ambiguity when they are risk-averse. While there is empirical evidence that suggests that, on average, voters are risk-averse (Alvarez, 1998; Bartels, 1986), others claim that voters tend to be risk-neutral (Berinsky & Lewis, 2007; Eguia, 2009). Only limited empirical evidence supports the idea of risk-loving voters (for example Morgenstern & Zechmeister, 2001). In general, the evidence is that voters are risk-neutral, implying that the power of the risk attitude explanation is limited. Another explanation for the attractiveness of ambiguity from the

voters' perception involves projection bias (Callander & Wilson, 2008; Jensen, 2009). So far only one study empirically examines this argument, finding support (see Chapter 3).

So, research reveals that risk attitude and projection bias may well influence how people deal with ambiguity in a voting context. What we add here is the complementary argument that exposure to feelings that can potentially change the self will have an impact as well. Although attempts have been made to understand the dynamics of precise versus ambiguous platform preferences, extant work to date is not even close to coming up with a full explanation. In this chapter, we take a voters' perspective and look at an alternative explanation, namely personal uncertainty, which might operate on top of the role of risk attitude (and projection bias) in this relationship.

An Identification/ issue angle

The concept of identification has been much studied, especially in social sciences and humanities. Literature on identification has found its way from psychology and sociology into the political science literature, but the number of quantitative studies into political behavior is rather limited, to date (Huddy, 2001). In the last ten years or so, papers acknowledge the role of identification in voting behavior. These papers, however, mainly focus on party identification (Huddy, Mason, & Aarøe, 2015) and to a lesser extent, on identification with the candidate (amongst others Schuessler, 2000; Spada & Guimarães, 2013). Party identification is central to the study of American political behavior (Huddy et al., 2015), historically believed to be one of the key determinants of candidate choice in voting behavior in congressional elections (Nelson, 1978). Stokes and Miller (1962) empirically tested this relationship and found that “only 5 per cent of the Democrats and 6 per cent of the Republicans deviated from their party affiliations in voting for congressional candidates” (Nelson, 1978, p.666).

But times have changed. More and more people are voting against their own party's candidate (Nelson, 1978) and "voters no longer strongly identify with one of the major parties as they ones did" (Wilson, Dilulio, & Bose, 2013, p.172). Party membership has decreased (Berglund et al., 2005; Enyedi, 2008; Green-Pedersen, 2007), and volatility in elections has increased (Green-Pedersen, 2007; Mair, 2002, 2008). At the same time, in many elections, candidates are relatively unknown (Niedermayer 2005 in Porten-Che  , 2013). These developments undermine the role of candidate and / or party identification, implying that political competition turned focus on issues instead of traditional social cleavages (Garc  a-D  az et al., 2013; Green-Pedersen, 2007; Lowery et al., 2013).

Lately, literature has stressed that issue orientation does play an important role in explaining voting behavior (Porten-Che  , 2013). It is the issue that attracts voters to a certain party (Lowery et al., 2010; Schlesinger, 1984). Because of this, we believe that identification with an entity underlying the issue (identification with the nation-state or a higher-level entity, such as the EU) is likely to play a substantial role in voting behavior. To date, this has not been investigated, as far as we are aware of. We argue that the nature of issues can activate personal uncertainty in people with high identification, and can therefore change the way in which those people will deal with ambiguity in voting. So far, in voting literature, ambiguity has mainly been approached from a voters' risk attitude and projection bias angle. We claim that people can experience personal uncertainty because of the fear that s/he can have of losing something – in this case, the fear to lose an identity. This can influence the extent to which voting ambiguity is appreciated or not. We argue that the political issue can potentially change an identification entity, and therefore may trigger personal uncertainty of a high-identification voter. This personal uncertainty will reduce the voters' willingness to accept ambiguity, preferring

candidates that show more commitment to their policies, therefore decreasing voters' preference for ambiguous political platforms.

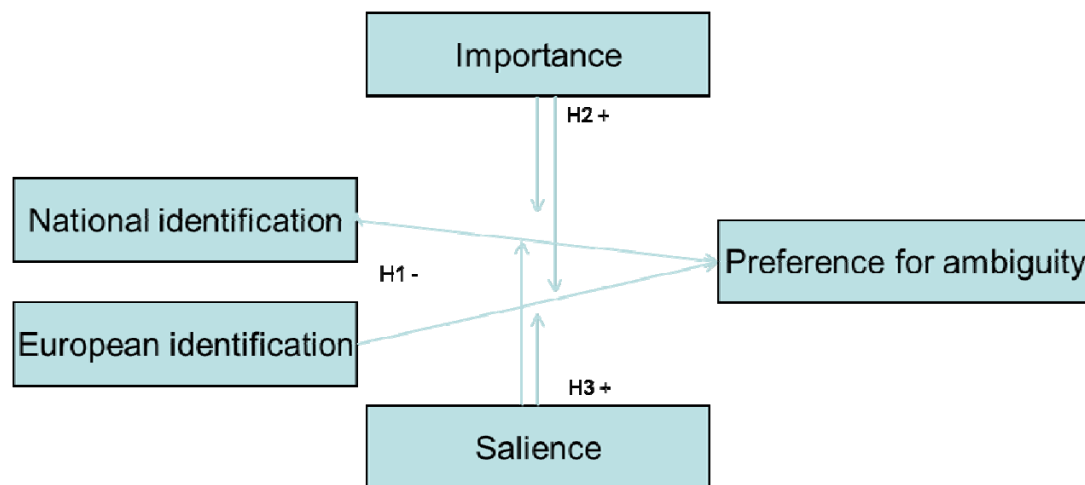
Personal Uncertainty

Social identity develops when a member of a group defines or evaluates him or herself in terms of the social category (Hogg & Hains, 1996). Social memberships of groups represent prototypes, which aid understanding who we as well as the other members are, and how we should behave compared to non-group members. Social identity theory proposes that identification results from people having a need to fulfill basic human needs, such as self-evaluation (Hogg & Mullin, 1999), positive self-esteem (Hogg & Abrams, 1988) and a need to reduce uncertainty (Hogg, Meehan, & Farquharson, 2010). "The more one conceives of oneself in terms of the membership of a group, that is, the more one identifies with the group, the more one's attitudes and behavior are governed by this group membership" (Knippenberg van & Schie van, 2000, p.138). Social identity theory argues that people try to achieve a positive social identity (Scheepers & Ellemers, 2005). People can fulfill this need by identifying with a social entity, which positively distinguishes itself from other groups.

When exposed to a situation (or, in this chapter's case, a political issue) that can potentially change the entity with which one identifies, personal uncertainty can be triggered. Personal uncertainty or self-uncertainty, as defined by van den Bos (2009, p.198) (following Arkin, Oleson, & Carroll, 2009) entails "a subjective sense of doubt or instability in self-views, worldviews, or the interrelation between the two." It can develop acutely, and it can emerge from unclarity or inconsistencies within the cognitions forming the self (McGregor, Zanna, Holmes, & Spencer, 2001). Experiencing uncertainty about who you are is an aversive feeling (Hogg, Siegel, & Hohman, 2011), which can trigger behavior aimed to reduce these feelings.

In this study, we examine whether the extent of identification (either with Europe or the nation-state) influences the degree in which voters prefer ambiguous versus precise standpoints of political parties. The concept of personal uncertainty is introduced to explain this relationship. We look at a potential interaction effect between the two identifications and two characteristics of political issues that might moderate this relationship, as visualized in Figure 5.1.

Figure 5.1: Theoretical Framework



Three hypotheses

When people identify with an entity, the entity is incorporated within the self. As the entity becomes part of the self, it can influence the behavior of the identifier. Confronted with a voting choice related to an issue associated with this entity, we argue that a strong identification with this entity increases the preference to vote for a candidate with a precise position regarding this issue as the tolerance for ambiguity decreases (given the distance between the voter's preferred position and the candidate). Literature on personal uncertainty and insights from uncertainty reduction, fluid compensation and self-affirmation theory explain this conjecture.

Being confronted with anything that can potentially change the entity with which one identifies can trigger personal uncertainty by reducing the certainty about their sense of self (Hogg, 2001). Personal uncertainty is seen “as an antecedent of negative emotions as it will lead

to an aversive feeling” (Bos van den, 2009, p.198). This negative feeling arises due to the fact that people have a negative association with a reduced control over one’s life (Bos van den, 2009). Uncertainty can trigger correcting human behavior (Hogg, 2007; Hogg, 2014) as it is in our human nature to try to resolve, avoid or manage feelings of uncertainty when the uncertainty is experienced as important (Hogg, 2007). People have a tendency to compensate for the potential loss they might face when the self is being threatened (Heine, Proulx, & Vohs, 2006) because people are meaning-makers, continuously focused on categorizing themselves, others and everything around them and using these categories and mental representations to make sense of incoming information.

People that face personal uncertainty try to find a reaffirmation of their sense of self in alternative representations (Heine et al., 2006). These people can cope with personal uncertainty by stressing certainty in other areas (McGregor et al., 2001). We see this process happening when personal uncertainty strengthens identification with more radical groups (amongst others Hogg et al., 2010), but research has shown that this behavior occurs in many situations in which people experience personal uncertainty (amongst others McGregor et al., 2001). This focusing on certainty in other areas helps to mask the inner uncertainty (McGregor et al., 2001). A political issue that can potentially impact the entity with which one identifies can trigger this personal uncertainty. We expect these people to, in trying to reduce the feelings of uncertainty they experience, vote in a different way vis-à-vis members of groups not experiencing these feelings. By giving the voter a chance to cast a vote regarding the individual issue, we believe we can capture the effect in which a high-identification voter will be inclined to eliminate uncertainty by voting for the precise candidate. By feeling the need to stress certainty in other areas, they will be inclined to favor a candidate with a precise position over an ambiguous counterpart.

Hypothesis 1: The higher the degree of identification (i.e., with The Netherlands or Europe), the higher the likelihood to prefer precise vis-à-vis ambiguous options.

Not all political issues are perceived in the same way by the voter. The perception of the issue will influence the relationship between identification and voting ambiguity preference. We can identify two potential moderators on the relationship regarding the perception of issues. The first relevant factor distilled from voting literature is the importance of the issue. The extent to which an individual will experience personal uncertainty is dependent on numerous factors. One of them is the perception this individual has of the importance of the issue (in voting literature, this phenomenon is often called attitude importance).

Issues in which people “are especially interested in and concerned about” are perceived as important (Krosnick, 1988, p.196). The concept of attitude importance is often discussed in political research as this influences how often a voters thinks about the attitude, and as this causes a perceived polarization between competing candidates regarding that specific issue (amongst others Krosnick, 1988). The personal uncertainty that is triggered by an issue potentially impacting the underlying identification entity is strengthened when the issue at hand is regarded as more important, since then voters will experience this potential change to the entity as more important. This will increase the experienced personal uncertainty, weakening the preference for ambiguity.

The second potential moderator that will influence the perception of the issue is the salience of the issue. Not all issues are perceived as being equally visible to the voter. The visibility of the issue is captured with the variable we call salience of the issue.

Taxes are something felt directly, making it a salient issue. At the same time it is rather important to most people. Immigration on the other hand can be viewed as equally important to a voter, but on a daily bases these voters encounter little interference with immigrants/immigration, making it a not so salient issue. The issue regarding more or less power for the European Union is regarded as not that salient. Although the EU is in the news frequently, being high on political agendas, it can be important to voters, but the effects resulting from a change in this policy are felt very indirectly. Hence, we believe we should make a distinction between importance and salience.

This salience of an event or issue influences people as these people receive more cues and information regarding this issue (Morgeson, Mitchell, & Liu, 2015). Issues that are perceived as more visible or notable are associated “with higher levels of emotional arousal” (Karniol & Ross, 1996; Lavalley & Campbell, 1995, p.342). Therefore, we argue that the salience of the issue increases emotional distress, and therefore strengthens the need to stress certainty, decreasing the preference for ambiguity.

Hypothesis 2: The importance of the issue positively moderates the relationship between identification and precise voting.

Hypothesis 3: The salience of the issue positively moderates the relationship between identification and precise voting.

Method

Data gathering and sample representativeness

A web-based experiment was done amongst 300 Dutch students of Tilburg University following the design of Tomz and Houweling (2009), Duch (2010), and Eckel and Grossman (2008). By

collecting data in the Netherlands and proposing fictive candidates we minimize party effects. We collect our data from a sample of second-year university students, reflecting how the general public will respond to a political phenomenon. For further details, please consult Chapter 3.

Experiment

In the design of our survey, we assumed that the political system works according to the proximity rule. This means that people vote for the party that is perceived to be closest to their position, and that they do not engage in strategic voting (Downs, 1957). Hence, we argue that the choice of the voter is dependent on: (1) the position the voter takes in compared to the candidates' positions (proximity rule, measured by the distance); (2) the risk attitude of the voter; and (3) the level of identification of the voter with the entity relevant in the context of the issue at hand.

Students were motivated to participate by offering ten money prizes of 40 euros each, distributed randomly on the basis of participation, and an additional prize of 100 euros for the participant scoring highest in the lottery game, which we used to measure risk attitude (see below). Before the experiment started, each participant completed a survey, including questions that helped to anonymously identify the participant for the purpose of matching different data sources. After completion of the survey, each participant was asked to pinpoint her or his personal political preference on a seven point-scale (1 to 3 reflecting the weakening of a specific policy, and 5 to 7 the strengthening of the specific policy) regarding the three political issues included in our study (see below).

Each participant was then presented with two fictitious candidates, represented as candidate A and B (following Tomz & Van Houweling, 2009, removing party effects):

Candidate A with a precise political stand and candidate B with an ambiguous stand. These positions were generated randomly. In line with the work of Tomz and Houweling (2009), we grouped the candidates' positions in four scenarios. In Scenario 1, the precise candidate is closer to the voter's preference; in Scenario 2, the ambiguous candidate is closer to the voter's preference; in Scenario 3, there is a straddle tie (the precise candidate is located at the center of the ambiguous candidate's positional interval); and in Scenario 4, we have a reflected tie (the precise and ambiguous candidates are at the same distance from the voter's preference, but at opposite sides).

National and European identification

Consistent with SIT and extant evidence (Vora & Kostova, 2007), we assume that people can identify with multiple targets: here, with the nation-state (the Netherlands) and Europe. Most research on European versus national identification makes use of data collected measured by the Eurobarometer. Identification is measured here as a question relating to an individual's relative identification with the nation-state and Europe: "Do you feel Dutch only, Dutch and European, European and Dutch or European only?" There are multiple problems with this standard EU-15 measurement. One of them is that this type of questioning seems to ignore the fact that identities can be positively correlated, instead of opposed, which is common when we compare European with national identities (Bruter, 2003). Based on this and other critiques, the literature developed numerous ways to measure European and national identification, but without any convergence to an agreed-upon measure.

We decided to adapt the measurement of Mael and Ashfort (1992), which is a measurement instrument developed in the organizational literature. This scale consists of six questions that are all answered on a five-point Likert scale. This measurement instrument is

rather straightforward and clear. As we use this measurement in a new context, we did a factor analyses before computing the final variable. Table 5.1 shows the 12 questions of our adapted scale (six regarding the Netherlands and six involving Europe).

Table 5.1: Identification scale

<i>European/ national identification (five point Likert scale):</i>	
Q1/ Q7	When someone criticizes The Netherlands/ Europe, it feels like a personal insult
Q2/ Q8	I am very interested in what others think about my The Netherlands/ Europe
Q3/ Q9	When I talk about The Netherlands/ Europe, I usually say “we” rather than “they”
Q4/ Q10	Successes of The Netherlands/ Europe are my successes
Q5/ Q11	When somebody praises The Netherlands/ Europe, it feels like a personal compliment
Q6/ Q12	If a story in the media criticized The Netherlands/ Europe, I would feel embarrassed

A factor analyses on all 12 questions gives two factors: the first factor with an eigenvalue of 4.4 and the second factor with an eigenvalue of 1.0, together explaining almost 88 per cent of the variance. Although the first factor correlates with all questions (from 0.331 up to 0.743), varimax rotation reveals we should distinguish between two separate factors. We can clearly see a distinction between the questions regarding national identification vis-à-vis those involving European identification. All questions (except question 2, which only stands out in the national identification sub-scale, and not in the European identification sub-scale) load cleanly onto two factors. Table 5.2 displays a forced two factor analysis.

Table 5.2: Forced two factor analyses

variable	factor 1	factor 2	Uniqueness
Q1		0.734	0.408
Q2		0.308	0.828
Q3		0.401	0.835
Q4		0.559	0.637
Q5		0.781	0.341
Q6	0.357	0.623	0.485
Q7	0.689	0.338	0.412
Q8	0.558		0.664
Q9	0.488		0.755
Q10	0.623		0.564
Q11	0.745	0.312	0.347
Q12	0.734		0.394

The correlations between the separate questions regarding European identification vary between 0.3038 and 0.6463, all meeting the requirements (including question 2). The Cronbach's alpha is 0.8198 and the items of this scale load onto one factor. For national identification, the correlations are all positive, ranging from 0.1808 (between questions 2 and 4) to 0.6130. The requirements indicate the correlation should be between 0.3 and 0.7. Question 2 is an outlier, as we have seen in our factor analysis as well, with three out of five correlations not fulfilling the requirement. With a Cronbach's alpha of 0.787 and no theoretical indication for why this question should be removed, we decided to leave this question in the scale, comparable to the scale of European identification. We have a positive correlation between European and national identification, as expected. At 0.58, this correlation is relatively high, but significantly lower than 0.7. The factor analyses confirm that the items load onto two separate factors, so we are confident that we can include both variables separately in our analyses. A scatter plot reveals a non-linear positive correlation.

As this scale is new to the voting literature, we believe we would fall short on the scale by taking the average of the six questions, as often done. Based on our factor analyses, we

had Stata predict the variable. For national identification, question 1 is given a weight of 0.25, question 2 of 0.17, question 3 of 0.19, question 4 of 0.22, question 5 of 0.27, and question 6 of 0.28. For European identification, question 1 is given a weight of 0.27, question 2 of 0.12, question 3 of 0.10, question 4 of 0.23, question 5 of 0.36, and question 6 of 0.27. We ran our analysis with this variable first. We did not find any results. Based on our theory, in which we compare high to low identifiers, and given that our study is the first of its kind, we decided to split the predicted variable at the median to get a sharper distinction between these two groups. Below, we report the results of these analyses, referring to the variables *High Identification Nation* and *High Identification Europe*.

Moderator variables

The *Issue importance* is measured by asking each respondent to assess the importance of the issue from her or his perspective. Respondents were asked to evaluate this importance on a scale from 0 to 4 (0 being totally insignificant and 4 being extremely important). In order to compute the variable *Issue salience*, we gave the value of 0 to the issue regarding more or less power for the European Union, as we believe that this issue reflects the least salient issue, a value of 1 for the social left/right issue for medium salience, and a value of 2 for the issue regarding the economic left/right as this is expected to be most salient. The economic left/right issue is regarded as most salient out of the three because each voter pays taxes. Therefore, the tax burden is quite visible for the voter. The issue regarding more or less power for the European Union is regarded as least salient. Although the EU is in the news frequently, being high on political agendas, the visibility for the voter is lower as results from a change in this policy are felt more indirectly. Note that, at the time of measurement, there were no clear signs of any potential massive immigration wave from Syria.

Control variables

Politics have been entrenched with religion throughout history (Marsh, 2006). Therefore it is generally accepted that religion impacts voting behavior (amongst others Kotler-Berkowitz, 2001). We include belonging to a religion and the intensity of the religion as control variables, as they are viewed as separate and independent aspects of religion. We code (intensity of) Catholicism, Protestantism, Islam and Atheism separately. Intensity was assessed on 3 questions ranging from 1 (very low intensity) to 5 (very high intensity).

Risk attitude is incorporated as a control variable since this attitude directly impacts the preference for ambiguity (Shepsle, 1972). As self-reported measurements of risk attitudes can give a distorted perspective (see Chapter 3 for further detail), we measured the participant's risk attitude by including a lottery game in our experiment with which the participants could win monetary prizes, to incentivize a truthful revelation of risk attitude (Camerer & Hogarth, 1999; Dohmen et al., 2011). The lottery game was designed in accordance with the studies by Duch (2010) and Eckel and Grossman (2008).

In Scenarios 1 and 2, we present our voters with alternatives with different distances from the voter's preference. As voters have the tendency to vote for the candidate closest to their preferred position, we add the variable *Distance* as a control variable. The models that are run on the sub-set of data only containing Scenarios 3 and 4 are limited to the cases where candidates are always at the same distance from the voter's position. For these models, we include the two different ties that a voter might have been exposed to (*Straddle tie* and *Reflected tie*, both dummies coded 1 if the condition is satisfied and 0 otherwise), as we can expect this to impact voting behavior as well.

As we explain in the next sub-section, we include three political issues that have dominated public debate in the Netherlands the past few years. We limited our sample to Dutch-speaking participants, as we focus on the Netherlands. We add the control variable *Feeling Dutch* to measure the connection to this country. Respondents were asked to assess whether they felt mostly Dutch or identified with another ethnic group.

As discussed in our third chapter, projection bias increases the voter's preference for ambiguity. Therefore, we control for *Projection Bias*, measured by including the question: "If you have to guess: Which of the three alternative policies of party B do you think is more likely to be implemented when party B is elected?" in the survey attached to the experiment. A voter has no projection bias when s/he indicates to believe the central position in the ambiguous candidate's positional interval is most likely to materialize, a positive bias when the guess is closer to the voter's own position, and a negative position when the voter indicates any position exceeding the average and further away of their own position is most likely.³²

Context

We focus on three political issues that have dominated the Dutch political system to examine the effect of national and European identification on voting ambiguity preference. The first issue concerns the integration of immigrants in the Netherlands, which has been high on political agenda's for quite a few years. (The data was collected between 5 and 23 November of 2012, so before the immigrant wave from Syria.) The second issue addresses the power of the European

³² Identity is stronger the longer this identity has been part of the self (Scott, Corman, & Cheney, 1998). Moreover, identification becomes more salient through exposure (George & Chattopadhyay, 2005). Therefore, age is one of the most common control variables in this type of research. However, as we limit ourselves to students participating in a second-year class at Tilburg University, we expect to have almost no variation on this variable. Therefore, we did not include age (or, for that matter, education) as control variable.

Union vis-à-vis nation-states, including the Netherlands. The power distribution between the European Union and the Member States is an ongoing debate ever since the creation of the European Union. National policies have become partly dependent on legislation from Brussels, being high on the agenda of many political parties. The third issue focuses on the financial deficits of the nation-state, which relates to a national debate as to how to deal with the economic crisis.

Table 5.3: Descriptives

Variable	Mean	Std. Dev.	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 Ambiguity	0.475	0.500	0.000	1.000	1.000																
2 Distance	-0.166	1.200	-4.000	2.000	0.580	1.000															
3 Straddle tie	0.225	0.418	0.000	1.000	-0.037	0.076	1.000														
4 Reflected tie	0.126	0.332	0.000	1.000	0.084	0.055	-0.206	1.000													
5 Issue importance	2.838	0.792	0.000	4.000	-0.013	-0.047	0.009	-0.022	1.000												
6 Risk	4.153	1.997	0.000	8.000	-0.009	-0.015	0.000	-0.037	0.061	1.000											
7 Projection Bias	0.097	0.676	-1.000	1.000	0.063	-0.147	-0.022	0.114	-0.043	-0.045	1.000										
8 Intensity Catholic	-0.075	0.468	-1.145	1.723	-0.020	-0.047	-0.062	0.006	0.002	0.008	-0.008	1.000									
9 Intensity Protestant	0.052	0.306	-0.997	1.871	0.037	0.018	-0.024	-0.034	-0.067	0.044	0.012	0.026	1.000								
10 Intensity Islam	0.027	0.238	-1.145	1.944	0.024	0.017	-0.051	0.033	0.079	0.018	-0.011	0.016	-0.016	1.000							
11 Catholic	0.380	0.486	0.000	1.000	-0.016	0.015	0.035	0.004	0.053	0.003	-0.013	-0.207	-0.124	-0.079	1.000						
12 Protestant	0.078	0.268	0.000	1.000	0.060	0.002	0.009	-0.035	-0.053	0.039	0.023	0.047	0.549	-0.029	-0.226	1.000					
13 Islam	0.032	0.177	0.000	1.000	0.057	-0.018	-0.063	0.029	0.070	-0.024	0.015	0.029	-0.028	0.570	-0.139	-0.051	1.000				
14 Atheist	0.166	0.372	0.000	1.000	-0.023	0.010	0.021	0.002	0.000	0.027	-0.010	0.074	-0.071	-0.046	-0.358	-0.130	-0.080	1.000			
15 Feel Dutch	0.945	0.228	0.000	1.000	-0.070	0.021	0.030	-0.029	-0.004	0.094	-0.057	-0.081	0.037	-0.338	0.093	0.067	-0.574	0.027	1.000		
16 High Identification Nation	0.500	0.500	0.000	1.000	-0.029	0.003	-0.005	0.030	0.097	0.137	-0.103	0.095	0.090	0.054	0.058	-0.039	-0.018	0.085	0.053	1.000	
17 High Identification Europe	0.500	0.500	0.000	1.000	0.014	-0.055	-0.036	0.048	0.025	0.014	0.009	0.052	0.025	0.019	0.081	-0.083	0.059	0.010	-0.146	0.369	1.000

Results

Testing hypotheses

As our dependent variable is binary, we predict our model using a logistic regression (logit). We use Huber-White's robust standard errors adjusting for potential heteroscedasticity. In total, 308 students participated in this experiment. We had to remove 8 students from the sample as they participated twice, leaving a sample of 300. Our sample consists of 34 per cent women, 85 per cent indicated they had voted in the last Dutch parliamentary election (of September 2012), and 97 per cent reported to have no party affiliation. Most participants do not belong to any religion (51 per cent), followed by Catholics (38 per cent), Protestants (8 per cent) and Muslims (3 per cent). Our participants come from diverse socio-economic family backgrounds. The descriptive statistics (see Table 5.3) show that we do not have any bivariate correlation above 0.7. The highest variance inflation factor (VIF) is 2.02 (Religion Islam), which is below the rule-of-thumb threshold of 10, indicating absence of multicollinearity (Myers, 1990).

Our first regression model consists of the control variables only (M1, M5 and M9) to offer a baseline for the change in the fit of subsequent models. We ran regressions for all three political issues separately. We did this for the entire dataset (Group II), as well as for Scenarios 3 and 4 only (Group I). For Group I, the results are derived for only those cases where both candidates were positioned at the same distance from the voter, so excluding distance effects. As we can see in Table 5.4 as well as in Table 5.5, all models improve when we include national and European identification, as the log likelihood becomes less negative. As explained in chapter 3 issue 1 shows striking results when we look at the coefficients of Islam and intensity of Islam. This is caused by two Islamic respondents. Excluding the two respondents in issue 1 scenario 3 and 4 (Group I) gives similar results. Therefore we decided to leave them in our analyses.

When analyzing Issue 1 (social left/right), we find a significant result for people identifying with the nation-state, but only for Group I, where the candidates are positioned at the same distance (Table 5.4; M2). So, when confronted with the political issue regarding whether to strengthen or loosen immigrant policies, voters who strongly identify with the Netherlands have a tendency to vote for a candidate with a more precise position. This is in line with H1.

We find an interesting opposing result when we look at the effect of high European identification in the context of Issue 3 (whether to grant more or less power to the EU), but only when we take Group II's entire dataset into account (as shown in Table 5.5). The result is barely significant, with a p value of 0.098. This means that when voters are confronted with the political issue whether to grant Europe more or less power, those voters who strongly identify with Europe have a tendency to vote for a candidate with a more ambiguous position, which goes against H1. When analyzing the distance-free results for Group I, excluding unequal distances, the effect of European identification disappears. We do not find any significant results for Issue 2. Out of the three issues, we could expect that Issue 1 would give the strongest (and, in this case, any) results. Throughout the literature, national identification has been often negatively linked to people's evaluation of pro-immigration policies (amongst others Verkuyten, 2009).

Table 5.4: Regression analysis H1 and H2 – Group I

Variables	Social left/right				Economic left/right				Pro-/anti- European integration			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Basic	H1	H2	H2	Basic	H1	H2	H2	Basic	H1	H2	H2
Straddle tie	-0.884* (0.478)	-0.748 (0.482)	-0.661 (0.486)	-0.676 (0.481)	-0.539 (0.491)	-0.525 (0.493)	-0.465 (0.507)	-0.532 (0.498)	-0.290 (0.488)	-0.111 (0.491)	-0.125 (0.502)	-0.105 (0.493)
Issue importance	0.046 (0.298)	0.086 (0.113)	-0.310 (0.437)	-0.197 (0.459)	0.136 (0.339)	0.156 (0.342)	-0.613 (0.537)	0.250 (0.499)	-0.028 (0.269)	-0.141 (0.284)	-0.029 (0.345)	-0.090 (0.367)
Risk	0.129 (0.110)	0.009 (0.113)	0.035 (0.119)	0.013 (0.114)	0.186 (0.120)	0.174 (0.120)	0.191 (0.122)	0.175 (0.120)	0.192* (0.114)	0.202 (0.124)	0.206 (0.126)	0.205* (0.124)
Intensity Catholic	0.637 (0.462)	0.758 (0.488)	0.848* (0.462)	0.848* (0.484)	-0.073 (0.385)	-0.079 (0.387)	0.256 (0.370)	-0.076 (0.385)	-0.679* (0.384)	-0.670* (0.386)	-0.673* (0.378)	-0.677* (0.383)
Intensity Protestant	0.581 (0.818)	0.719 (0.776)	0.675 (0.789)	0.718 (0.816)	omitted	omitted	omitted	omitted	-0.191 (0.716)	-0.477 (0.757)	-0.354 (0.792)	-0.430 (0.785)
Intensity Islam	-56.385*** (2.842)	-57.047 (2.849)	-56.620*** (2.883)	-53.919*** (2.896)	0.113 (1.119)	0.190 (1.135)	0.147 (1.207)	0.192 (1.139)	omitted	omitted	omitted	omitted
Catholic	0.698 (0.542)	0.656 (0.565)	0.804 (0.615)	0.726 (0.587)	0.761 (0.554)	0.725 (0.542)	0.751 (0.535)	0.739 (0.543)	-0.150 (0.527)	-0.286 (0.559)	-0.326 (0.578)	-0.288 (0.561)
Protestant	0.564 (0.899)	0.275 (0.864)	0.202 (0.904)	0.452 (0.939)	omitted	omitted	omitted	omitted	0.551 (0.737)	0.783 (0.767)	0.7555 (0.784)	0.790 (0.769)
Islam	59.196*** (3.405)	59.463 (3.479)	59.007*** (3.475)	56.112*** (3.502)	2.313 (1.720)	2.216 (1.720)	2.411 (1.704)	2.23 (1.724)	omitted	omitted	omitted	omitted
Atheism	0.087 (0.652)	0.260 (0.657)	0.477 (0.749)	0.3663 (0.699)	-1.237 (0.786)	-1.330 (0.828)	-1.374 (0.848)	-1.322 (0.825)	0.492 (0.657)	0.254 (0.675)	0.262 (0.681)	0.275 (0.677)
Feel Dutch	-1.473 (1.190)	-1.163 (1.244)	-1.119 (1.220)	-1.178 (1.178)	-0.354 (2.016)	-0.546 (2.080)	-0.727 (1.843)	-0.565 (2.080)	-0.998 (1.036)	-0.677 (1.038)	-0.705 (1.048)	-0.713 (1.052)
Projection Bias	1.105*** (0.316)	1.118** (0.340)	1.213*** (0.353)	1.173*** (0.354)	-0.354*** (2.016)	1.997*** (0.549)	1.973*** (0.553)	2.005*** (0.549)	1.378*** (0.371)	1.375*** (0.385)	1.372*** (0.386)	1.378*** (0.386)
High Identification Nation		-1.029* (0.605)	-3.378* (1.913)	-1.057* (0.626)		0.263 (0.545)	-3.232 (2.241)	0.256 (0.545)		0.0683 (0.649)	0.835 (1.823)	0.083 (0.653)
High Identification Europe		0.796 (0.616)	0.826 (0.619)	-0.620 (1.708)		-0.043 (0.519)	0.034 (0.521)	0.367 (2.080)		0.800 (0.621)	0.852 (0.636)	1.215 (1.607)
High Identification Nation*importance			0.837 (0.625)				1.133 (0.717)				-0.286 (0.620)	
High Identification Europe*importance				0.531 (0.605)				-0.135 (0.656)				-0.150 (0.547)
Constant	1.254 (1.365)	0.864 (1.451)	1.638 (1.541)	1.518 (1.607)	-1.733 (2.542)	-1.671 (2.591)	0.769 (2.842)	-1.950 (2.682)	0.436 (1.317)	-0.014 (1.399)	-0.272 (1.463)	-0.132 (1.492)
Observations	105	105	105	105	101	101	101	101	105	105	105	105
Log likelihood	-59.982	-58.281	-57.128	-57.807	-53.230	-53.12	-52.214	-53.108	-60.677	-59.286	-59.169	-59.255
Pseudo R2	0.169	0.193	0.201	0.199	0.227	0.229	0.242	0.229	0.1569	0.176	0.180	0.177

* p<0.1, ** p<0.05, *** p<0.01

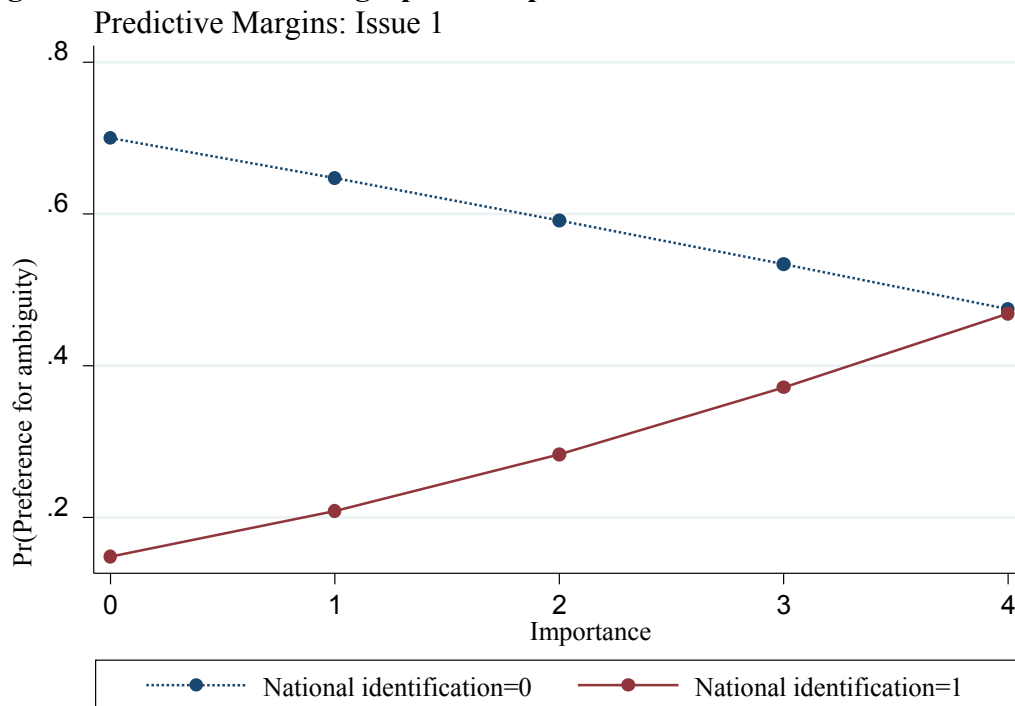
Table 5.5: Regression analysis H1 and H2 – Group II

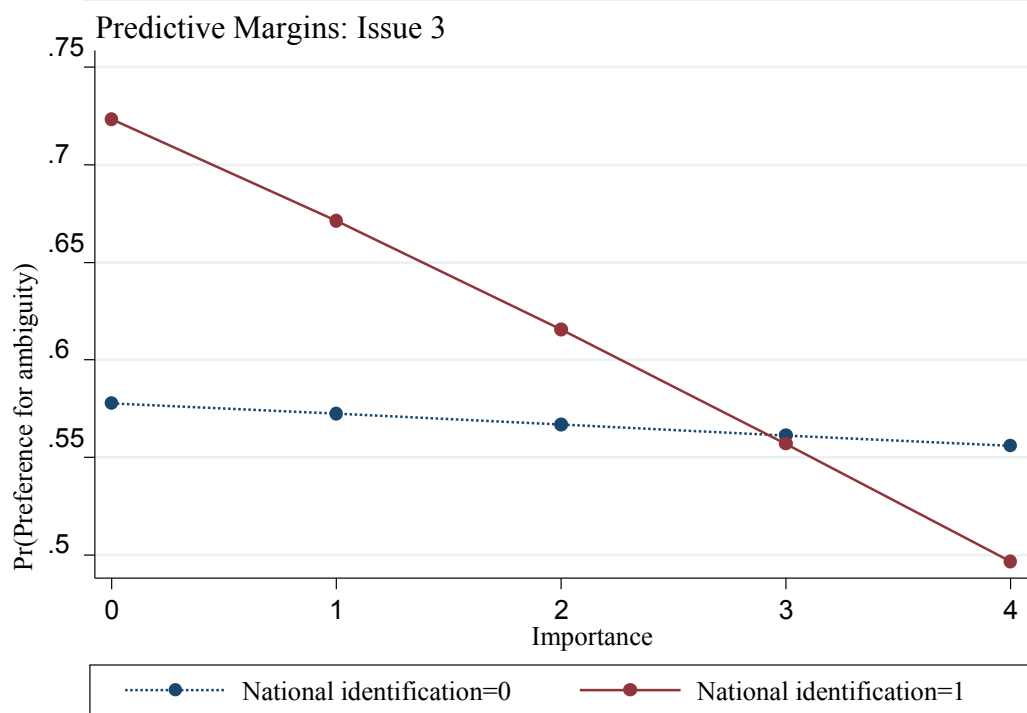
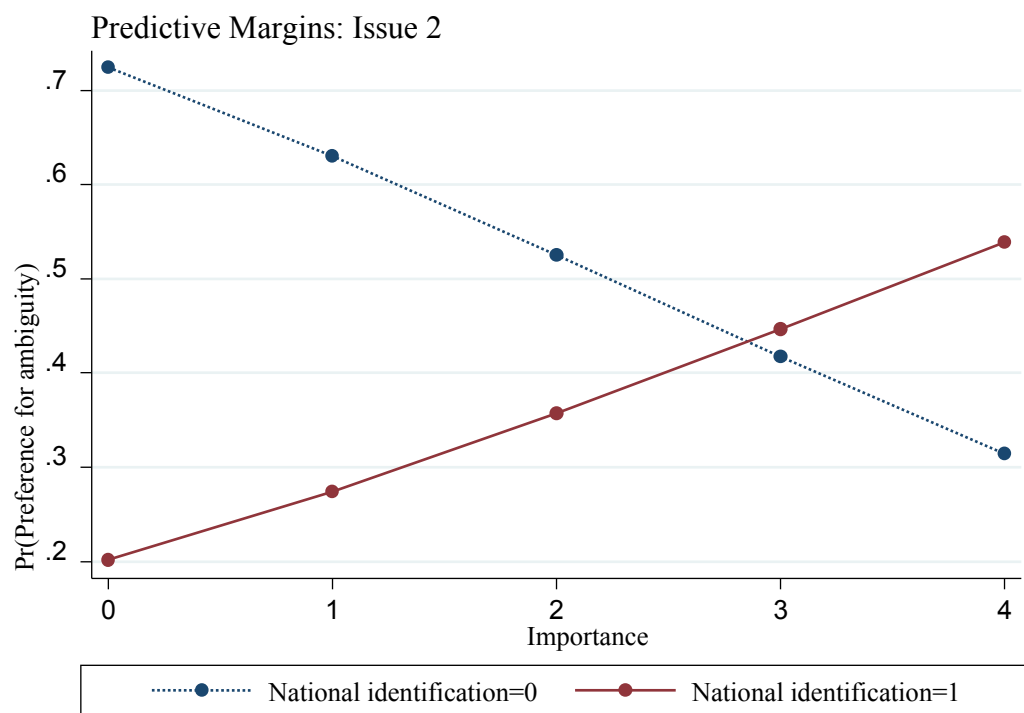
Variables	Social left/right				Economic left/right				Pro-/anti- European integration			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Basic	H1	H2	H2	Basic	H1	H2	H2	Basic	H1	H2	H2
Distance	2.826*** (0.449)	2.855*** (0.455)	2.907*** (0.471)	2.872*** (0.459)	1.800*** (0.282)	1.792*** (0.283)	1.837*** (0.293)	1.789*** (0.283)	1.413*** (0.209)	1.451*** (0.213)	1.459*** (0.215)	1.463*** (0.212)
Straddle tie	-0.795 (0.504)	-0.804 (0.511)	-0.742 (0.513)	-0.795 (0.514)	-0.965*** (0.333)	-0.958*** (0.334)	-0.888*** (0.341)	-0.949*** (0.3345)	0.310 (0.319)	0.394 (0.325)	0.388 (0.330)	0.378 (0.333)
Reflected tie	0.042 (0.543)	-0.028 (0.544)	-0.23 (0.536)	-0.068 (0.535)	-0.567 (0.416)	-0.56 (0.419)	-0.498 (0.423)	-0.551 (0.419)	0.664* (0.388)	0.691* (0.392)	0.684* (0.399)	0.679* (0.397)
Issue importance	-0.086 (0.224)	-0.065 (0.227)	-0.388 (0.332)	-0.316 (0.357)	-0.079 (0.190)	-0.087 (0.193)	-0.629** (0.290)	-0.228 (0.279)	0.203 (0.175)	0.206 (0.179)	0.183 (0.258)	0.156 (0.266)
Risk	-0.053 (0.093)	-0.047 (0.095)	-0.033 (0.099)	-0.044 (0.096)	0.122 (0.082)	0.117 (0.083)	0.124 (0.083)	0.117 (0.083)	0.472 (0.765)	0.545 (0.786)	0.055 (0.079)	0.054 (0.079)
Intensity Catholic	0.309 (0.364)	0.348 (0.361)	0.434 (0.366)	0.395 (0.356)	0.159 (0.283)	0.143 (0.292)	0.202 (0.283)	0.136 (0.2945)	-0.241 (0.276)	-0.247 (0.280)	-0.244 (0.281)	-0.237 (0.282)
Intensity Protestant	0.518 (0.628)	0.613 (0.619)	0.590 (0.618)	0.599 (0.644)	0.932 (0.782)	-1.002 (0.780)	-0.806* (0.742)	-0.945 (0.762)	0.202 (0.537)	0.182 (0.525)	0.175 (0.524)	0.155 (0.532)
Intensity Islam	-2.179** (0.856)	-2.120** (0.898)	-2.224** (0.905)	-2.156** (0.927)	-0.217 (0.606)	-0.223 (0.616)	-0.228 (0.592)	-0.216 (0.627)	-1.342** (0.542)	-1.270** (0.533)	-1.276** (0.533)	-1.266** (0.532)
Catholic	0.411 (0.417)	0.422 (0.423)	0.524 (0.446)	0.457 (0.429)	-0.058 (0.339)	-0.079 (0.341)	-0.096 (0.346)	-0.100 (0.346)	-0.085 (0.331)	-0.107 (0.339)	-0.103 (0.337)	-0.108 (0.340)
Protestant	0.456 (0.703)	0.385 (0.682)	0.361 (0.684)	0.509 (0.719)	1.559* (0.804)	1.623** (0.820)	1.504 (0.792)	1.577* (0.809)	0.400 (0.516)	0.481 (0.521)	0.485 (0.519)	0.486 (0.517)
Islam	2.692** (1.327)	2.772* (1.437)	2.939* (1.425)	2.796* (1.473)	0.902 (1.015)	0.959 (1.056)	1.185 (1.043)	0.904 (1.068)	2.524*** (0.907)	2.484*** (0.873)	2.496*** (0.872)	2.497*** (0.868)
Atheism	0.380 (0.556)	0.492 (0.570)	0.623 (0.588)	0.542 (0.578)	-0.869* (0.487)	-0.890* (0.494)	-1.025** (0.506)	-0.918* (0.494)	0.071 (0.426)	0.060 (0.425)	0.056 (0.427)	0.051 (0.429)
Feel Dutch	-0.546 (0.854)	-0.382 (0.862)	-0.320 (0.845)	-0.403 (0.861)	-1.206* (0.724)	-1.062 (0.722)	-0.966 (0.681)	-1.052 (0.729)	-0.168 (0.696)	-0.029 (0.681)	-0.025 (0.681)	0.002 (0.690)
Projection Bias	0.781*** (0.295)	0.765*** (0.295)	0.816*** (0.300)	0.800*** (0.300)	0.930*** (0.242)	0.928*** (0.245)	0.940*** (0.254)	0.935*** (0.248)	0.675*** (0.236)	0.649*** (0.236)	0.649*** (0.237)	0.650*** (0.236)
High Identification		-0.439	-2.382*	-0.436		-0.005	-3.452***	0.012		-0.288	-0.423	-0.300
Nation		(0.412)	(1.390)	(0.417)		(0.359)	(1.302)	(0.361)		(0.325)	(0.984)	(0.325)
High Identification		0.198	0.212	-1.039		0.297	0.366	-0.538		0.540*	0.534	0.243
Europe		(0.394)	(0.392)	(1.297)		(0.351)	(0.356)	(1.229)		(0.326)	(0.334)	(1.016)
High Identification			0.702				1.131***				0.051	
Nation*importance			(0.473)				(0.403)				(0.358)	
High Identification				0.456				0.275				0.002
Europe*importance				(0.451)				(0.383)				(0.357)
Constant	0.933 (1.044)	0.814 (1.132)	1.478 (1.238)	1.483 (1.338)	1.338 (0.872)	1.101 (0.864)	2.584** (1.040)	1.514 (1.041)	-0.877 (0.894)	-1.202 (0.932)	-1.142 (1.077)	-1.085 (1.059)
Observations	299	299	299	299	299	299	299	299	299	299	299	299
Log likelihood	-96.361	-95.851	-94.686	-95.343	-132.989	-132.541	-129.659	-132.360	-152.714	-151.294	-151.284	-151.247
Pseudo R2	0.527	0.529	0.535	0.532	0.358	0.360	0.374	0.361	0.263	0.270	0.270	0.270

*** p<0.01, ** p<0.05, * p<0.1

In Hypothesis 2, we propose a moderation effect of issue importance. Again, we estimated the interaction effect of *High National Identification* with *Issue Importance* for all three issues for the whole dataset, as well as the equal distance Scenarios 3 and 4. Tables 5.4 and Table 5.5 display the results. We only find a significant result for Issue 2 regarding the economic left/right, and only when we look at the entire dataset. For Scenarios 3 and 4, the result becomes insignificant, with a p value of 0.114. To achieve a better understanding of the interaction effect between *High National Identification* and *Issue Importance*, we plotted the graphs for the Group I as well as the Group II sample.

Figure 5.2: The interaction graphs of importance and national identification – Group I



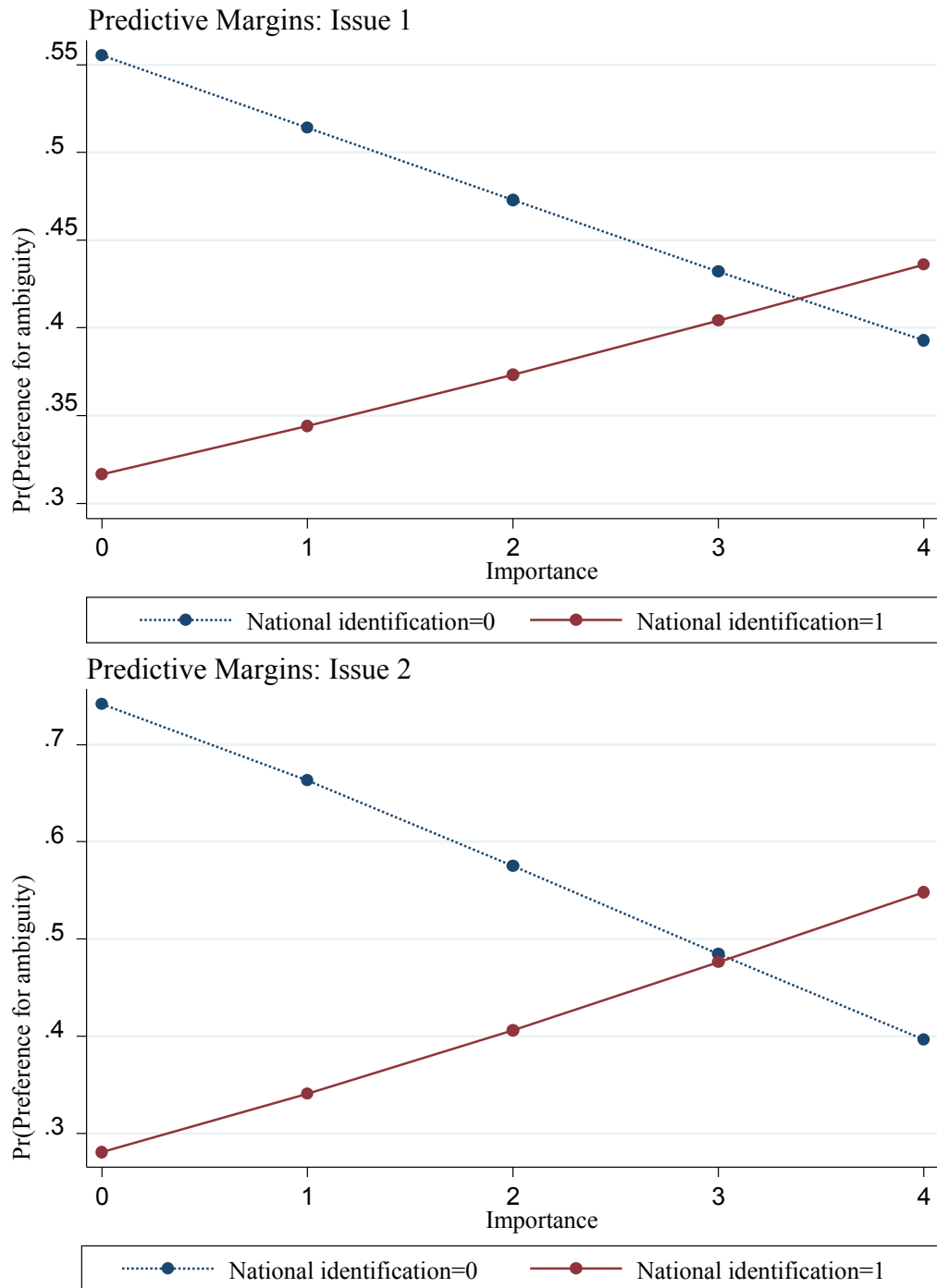


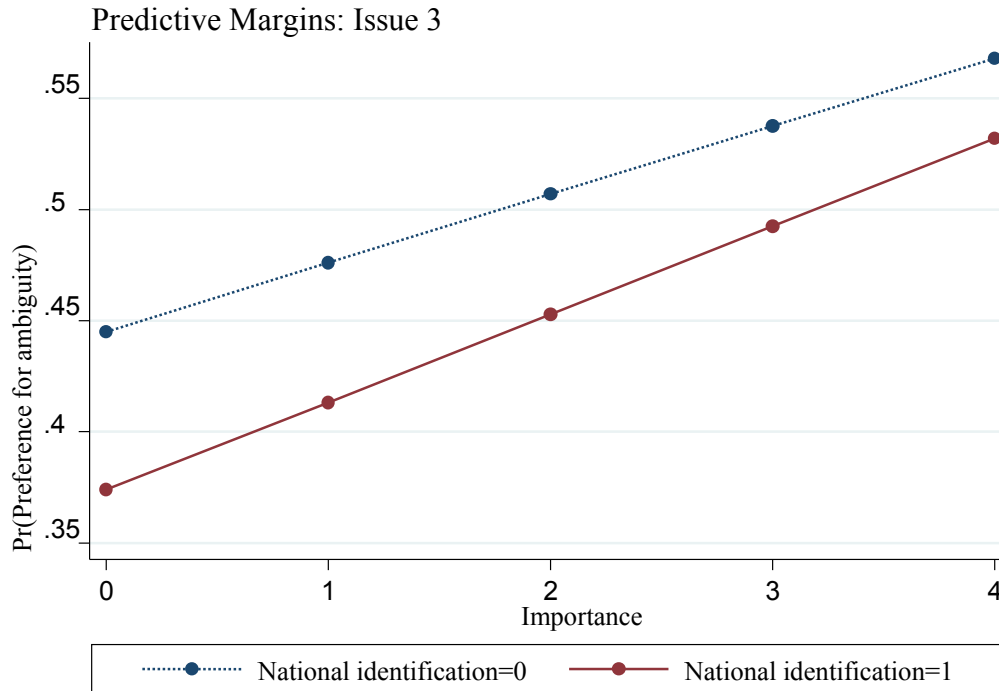
We plotted the marginal effects³³ and calculated their significance in order to determine the significance of our results. The first graph regarding national identification and Issue 1 (Group I) did not give a significant result in the regression analysis, but the graph reveals significance at *Issue Importance* = 0,³⁴ showing that at low levels of national identification (and low issue importance) ambiguity is preferred whilst at high levels of national identification (and low issue importance) precision is preferred, which could potentially support our second hypothesis. The graph regarding Issue 2 is significant in all calculated points,³⁵ and reveals that voters who have high identification with the nation-state seem to shift towards preferring an ambiguous candidate when the issue's importance increases. The opposite is occurring for low national identification. Then, voters seem to develop a preference for precision when issue importance increases. These results are opposing our Hypothesis 2. The interaction graph for Issue 3 for national identification is not significant.³⁶ For European identification, none of the interaction graphs (included in Appendix 5.2) are significant for Group I.

We performed the same analysis for Group II, when all Scenarios 1, 2, 3, and 4 are included. The graphs are plotted in Figure 5.3. Again, we plotted the marginal effects and calculated the significance of our results.

³³ All marginal effect graphs are available upon request.

³⁴	At importance is 0	Prob > chi2 = 0.0681
	At importance is 1	Prob > chi2 = 0.1097
	At importance is 4	Prob > chi2 = 0.1768
³⁵	At importance is 0	Prob > chi2 = 0.0004
	At importance is 1	Prob > chi2 = 0.0329
	At importance is 4	Prob > chi2 = 0.0812
³⁶	At importance is 0	Prob > chi2 = 0.6115
	At importance is 1	Prob > chi2 = 0.6252
	At importance is 4	Prob > chi2 = 0.6399

Figure 5.3: The interaction graphs of importance and national identification – Group II



The interaction effect between national identification and importance for Issue 1 for Group II data is only significant at *Issue Importance* = 0,³⁷ in line with the findings for Group I. For Issue 2, the entire graph is significant³⁸ and rather similar to the second graph for Group I. The interaction effect for Issue 3 is insignificant,³⁹ which again is comparable with our analysis of Group I. The graphs and significance levels of interaction effects with European identification are included in Appendix 5.3 of this chapter, as results for all three issues are insignificant. Based on our analyses, we reject H2.

³⁷	At importance is 0	Prob > chi2 = 0.0944
	At importance is 1	Prob > chi2 = 0.1130
	At importance is 4	Prob > chi2 = 0.1260
³⁸	At importance is 0	Prob > chi2 = 0.0000
	At importance is 1	Prob > chi2 = 0.0004
	At importance is 4	Prob > chi2 = 0.0039
³⁹	At importance is 0	Prob > chi2 = 0.8944
	At importance is 1	Prob > chi2 = 0.8883
	At importance is 4	Prob > chi2 = 0.8733

In order to test Hypothesis 3, we generated the variable *Issue Salience*. The results are reported in Table 5.6, again for all issues separately, and for both Group I and Group II data. We do not find any significant results, as we can see from this table. By way of check, we plotted the interaction graphs and marginal effects, and calculated the intervals of significance (see Appendix 5.4). Again, none of the results is significant. Therefore, we fail to find support for Hypothesis 3.

Table 5.6: Regression analyses H3

Variables	Group I		Group II	
	(1)	(2)	(3)	(4)
	H3		H3	
Distance			1.771***	1.776***
			(0.122)	(0.123)
Straddle tie	-0.421	-0.398	-0.346*	-0.340*
	(0.266)	(0.267)	(0.200)	(0.200)
Reflected tie			0.079	0.078
			(0.238)	(0.238)
Issue importance	0.022	-0.002	0.038	0.039
	(0.161)	(0.164)	(0.113)	(0.114)
Risk	0.112*	0.118*	0.048	0.049
	(0.064)	(0.064)	(0.045)	(0.045)
Intensity Catholic	-0.045	-0.044	0.014	0.018
	(0.0250)	(0.0250)	(0.181)	(0.181)
Intensity Protestant	0.239	0.247	-0.007	-0.007
	(0.541)	(0.545)	(0.368)	(0.367)
Intensity Islam	-1.074	-1.110	-0.667	-0.655
	(1.1317)	(1.329)	(0.574)	(0.577)
Catholic	0.0361	0.346	0.009	0.009
	(0.312)	(0.313)	(0.210)	(0.211)
Protestant	1.005*	1.022*	0.768*	0.771*
	(0.590)	(0.593)	(0.420)	(0.419)
Islam	1.463	1.505	1.449*	1.437*
	(1.650)	(1.665)	(0.831)	(0.834)
Atheism	-0.141	-0.190	-0.148	-0.150
	(0.377)	(0.380)	(0.266)	(0.266)
Feel Dutch	-0.760	-0.730	-0.640	-0.649
	(0.726)	(0.737)	(0.480)	(0.481)
Projection Bias	1.264***	1.255***	0.751***	0.751***
	(0.211)	(0.212)	(0.139)	(0.139)
Salience	-0.399**	-0.193	-0.016	-0.004
	(0.158)	(0.246)	(0.107)	(0.168)
High Identification	-0.189	-0.187	-0.210	-0.287
Nation	(0.295)	(0.485)	(0.200)	(0.307)
High Identification	0.421	0.833*	0.333*	0.433
Europe	(0.287)	(0.486)	(0.195)	(0.304)
High Identification		-0.043		0.075
Nation*salience		(0.345)		(0.231)
High Identification		-0.380		-0.099
Europe*salience		(0.344)		(0.231)
Constant	0.291	0.112	0.241	0.231
	(0.889)	(0.915)	(0.599)	(0.611)
Observations	316	316	897	897
Log likelihood	-186.717	-185.910	-401.450	-401.344
Pseudo R2	0.147	0.151	0.353	0.353

*p<0.1, **p<0.05, ***p<0.01

Table 5.7: Summary results

	<i>Group I: Scenario 3&4</i>		<i>Group II: Scenario 1,2,3 &4</i>	
	<i>National identification</i>	<i>European identification</i>	<i>National identification</i>	<i>European identification</i>
<i>Issue 1</i>	—	No significant result	No significant result	No significant result
<i>Issue 2</i>	+	No significant result	+	No significant result
	(when moderated with importance)		(when moderated with importance)	
<i>Issue 3</i>	No significant result	No significant result	No significant result	+

Robustness Checks

We ran three sets of robustness analyses. First, as discussed extensively in Chapter 3, projection bias gives an alternative explanation for voters' preference for ambiguity. As a robustness check, however, we re-ran our models excluding this variable. After excluding projection bias, we find a positive significant result for European identification in the context of Issue 3 regarding the decreasing vis-à-vis increasing European integration issue, for both Scenarios 3 and 4 as well as for the entire sample.⁴⁰ Other results remain unchanged. Second, above, we split our sample (at the median) in participants with high versus low national and European identification. We re-ran our analyses for sub-sample Group I (limited to Scenarios 3 and 4) after creating three rather than two categories. Although a few coefficient estimates are closer to significance now, the results are similar. Third, we ran our regressions after incorporating an alternative identification variable, where we take the average of all six questions. We do not find any results here, as expected, as this variable is a less solid measure of identification.

⁴⁰ Tables are available upon request.

Discussion

Contributions and implications

This study provides more insights into ambiguity preference in a voting context. We suggest an alternative explanation as to why voters would prefer a precise over an ambiguous candidate and vice versa, based on voter identification and adding issue importance and salience as potential moderators. We test our hypotheses in an experiment with 300 Dutch university students. Although we do not find clear support for our hypotheses, we do believe that this study is a first step in stressing the importance of voter identification with entities other than political parties in co-determining voting behavior. At the same time, this study underlines the importance of a focus on issue competition, as specific issues clearly impact voting preferences in issue-specific ways.

As expected, we find results for Issue 1 for the smaller dataset only, and not for the total dataset. However, as displayed in Table 5.7, we have one significant result that we only find when we analyze the entire dataset, which is conflicting with our a priori argument that Scenarios 3 and 4 are likely to be associated with stronger results, as this reflects a purer dataset without noise from distance effects. Comparing the sign of the coefficient for European identification for Issue 3 in Scenarios 3 and 4 vis-à-vis Scenarios 1, 2, 3 and 4, we observe consistency. It is only the p value that changes, from 0.098 (being barely significant) to 0.198. So, the unexpected finding may well be caused by the limited statistical power of the smaller dataset.

Regarding H2, we have an interesting significant result for the economic left/right issue that is unexpected and hard to interpret. The contradicting results for H1 and H2 can be explained by prospect theory. Prospect theory argues that people take additional risks to avoid a

loss compared to the risk they take to achieve a comparable gain. With a high identification and high importance, change is more likely to be perceived as a loss. This can explain the increase of the preference for ambiguity. Aragonés and Poslewaite (2002) support this reasoning in their study where they discuss the possibility of issue-specific effects. They indicate that the intensity of the voter's preference can lead to a preference for ambiguity. A candidate precise on a position not preferred can be valued less than a candidate with an ambiguous position including the voter's preferred option. Then, the voter may well prefer the ambiguous candidate with a small possibility that the preferred option is executed vis-à-vis the precise candidate with no chance that the preferred option will materialize. Similarly, in our experiment, the ambiguous candidates' positional interval may be closer to the preferred option of the voter. In line with Aragonés and Poslewaite's (2002) reasoning, this might trigger preference for ambiguity, given the evidence that voters are more risk taking when facing an issue they perceive as critical.

A second explanation for our mixed results is that not all issues trigger personal uncertainty. Personal uncertainty arises when certainty about the sense of self is reduced (Hogg, 2001). However, we do not measure identification with an issue, but rather identification with an underlying entity. An issue might, therefore, not trigger personal uncertainty when the voter does not experience the uncertainty regarding the underlying entity. This emphasizes the importance of issue competition. A third explanation is that our mixed results can be driven by unobserved individual differences. To test for the effect of the salience of issues, we grouped the three issues in a specific order from more to less salience on the basis of our own subjective assessment. However, perceived issue salience may well differ from one individual to another, which are averaged out in our categorization.

The experimental setting in which we collected data was mainly designed to exclude party and candidate effects. In our experimental setup, we do not study the actual voting decision, but rather a not-so-consequential awareness regarding the issue. This has probably led to the fact that we might not have captured the exact sentiment that arises in actual voting decisions. Therefore, personal uncertainty is likely to be lower in our context, compared to an actual voting decision, as actual consequences cannot be attached to the “vote” in our experiment. This might be an explanation as to why we do not find strong support for our hypotheses. Hence, future field work would offer a research design highly complementary to our experimental protocol.

Appendix 5.1 Relevant survey questions⁴¹

European/ national identification (five point Likert scale):

When someone criticizes The Netherlands/ Europe, it feels like a personal insult
 I am very interested in what others think about my The Netherlands/ Europe
 When I talk about The Netherlands/ Europe, I usually say “we” rather than “they”
 Successes of The Netherlands/ Europe are my successes
 When somebody praises The Netherlands/ Europe, it feels like a personal compliment
 If a story in the media criticized The Netherlands/ Europe, I would feel embarrassed

Intensity of religion (five point Likert scale):

In my life, I experience the presence of the Divine (i.e. God)
 My religious beliefs are what really lie behind my whole approach to life
 I try hard to carry my religion over in to all other dealings in my life

Importance of the issue:

On the scale of 0 to 4 (0 being totally insignificant and 4 being extremely important) how important is this issue for you?

Experimental game to elicit risk preferences

Round	Option	Points
1	A certainty	5 points with certainty
	B Play the lottery	0 points if the die indicates 1,2 or 3 14 points if the die indicates 4,5 or 6
2	A certainty	5 points with certainty
	B Play the lottery	0 points if the die indicates 1,2 or 3 13 points if the die indicates 4,5 or 6
3	A certainty	5 points with certainty
	B Play the lottery	0 points if the die indicates 1,2 or 3 12 points if the die indicates 4,5 or 6
4	A certainty	5 points with certainty
	B Play the lottery	0 points if the die indicates 1,2 or 3 11 points if the die indicates 4,5 or 6

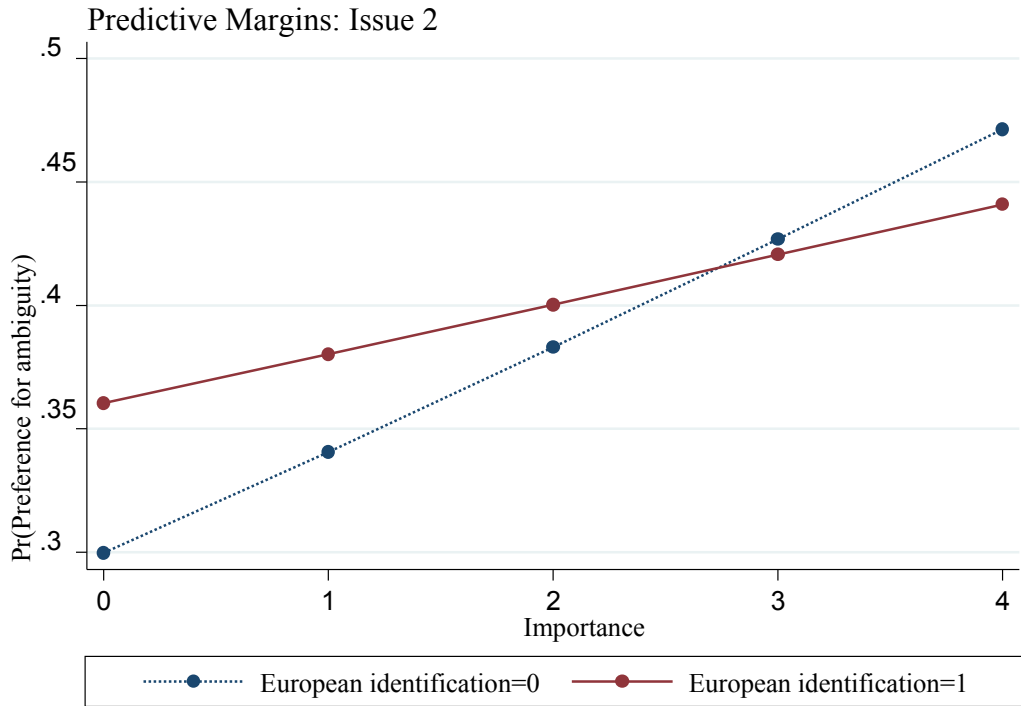
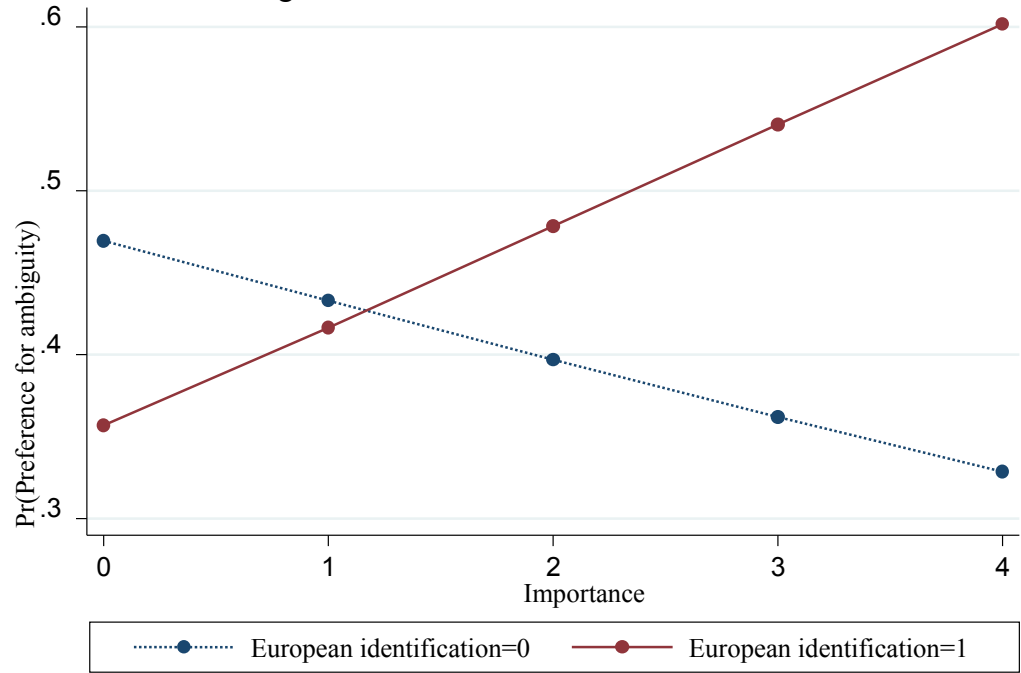
Round	Option	Points
5	A certainty	5 points with certainty
	B Play the lottery	0 points if the die indicates 1,2 or 3 10 points if the die indicates 4,5 or 6
6	A certainty	5 points with certainty
	B Play the lottery	0 points if the die indicates 1,2 or 3 9 points if the die indicates 4,5 or 6
7	A certainty	5 points with certainty
	B Play the lottery	0 points if the die indicates 1,2 or 3 8 points if the die indicates 4,5 or 6
8	A certainty	5 points with certainty
	B Play the lottery	0 points if the die indicates 1,2 or 3 7 points if the die indicates 4,5 or 6

⁴¹ These are the relevant items from a larger questionnaire.

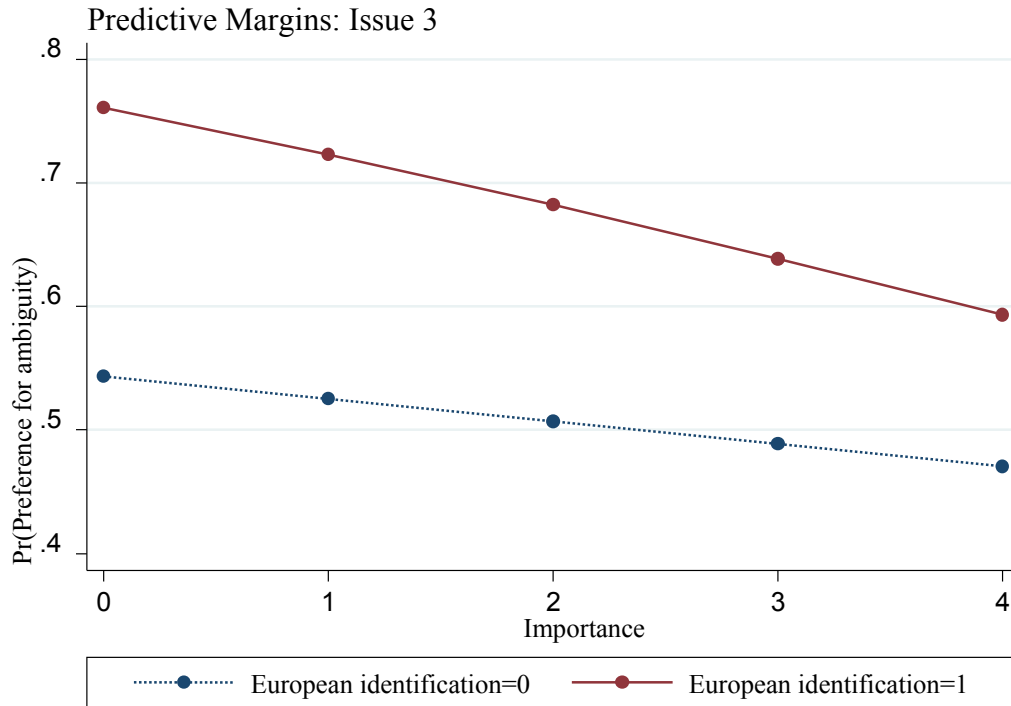
Voters' preferences regarding political issues in the Netherlands

<p>Large steps towards strengthening integration policies</p> <p>Medium steps towards strengthening integration policies</p> <p>Small steps towards strengthening integration policies</p> <p>Do not change significantly the situation</p> <p>Small steps towards relaxing integration policies</p> <p>Medium steps towards relaxing integration policies</p> <p>Large steps towards relaxing integration policies</p>	<p>B4. "There is a lot of concern about the growing number of immigrants in The Netherlands. Some people believe that immigration policies should be strengthened in order to encourage immigrants to integrate to the Dutch society. Others believe that immigration policies should be relaxed because immigrants should be allowed to keep their own cultural identity and integration can not be enforced". Now take a moment to read the following policies. In comparison to the current situation, which one of the following policies would you like to be implemented the most?</p>
<p>Large steps towards strengthening influence of European institutions on national policies</p> <p>Medium steps towards strengthening influence of European institutions on national policies</p> <p>Small steps towards strengthening influence of European institutions on national policies</p> <p>Do not change significantly the situation</p> <p>Small steps towards reducing influence of European institutions on national policies</p> <p>Medium steps towards reducing influence of European institutions on national policies</p> <p>Large steps towards reducing influence of European institutions on national policies</p>	<p>B5. The economic crisis of some European countries has strengthened the debate whether the Netherlands should remain in the European Union. Some people claim that the influence of European institutions on national policies should be strengthened, while others believe that European institutions have already too much power and that their influence on national policies should be reduced. Now take a moment to read the following policies. In comparison to the current situation, which one of the following policies would you like to be implemented the most?</p>
<p>Large increase of government expenditure, increasing taxes on the wealthiest</p> <p>Medium increase of government expenditure, increasing taxes on the wealthiest</p> <p>Small increase of government expenditure, increasing taxes on the wealthiest</p> <p>Do not change significantly the situation</p> <p>Small reduction in government expenditure, reducing public services</p> <p>Medium reduction in government expenditure, reducing public services</p> <p>Large reduction in government expenditure, reducing public services</p>	<p>B6. As a result of the financial crisis, Europe and The Netherlands face debt problems. This is putting pressures to control fiscal deficit (i.e. government expenditure minus total taxes). Some people argue that to control the fiscal deficit the country needs to reduce government expenditure, even if that means to reduce spending in public services (e.g. education, health). However, others argue that this could harm growth and it is better to increase government expenditure but increasing as well the taxes on certain groups (e.g. the wealthiest). Now take a moment to read the following policies. In comparison to the current situation, which one of the following policies would you like to be implemented the most?</p>

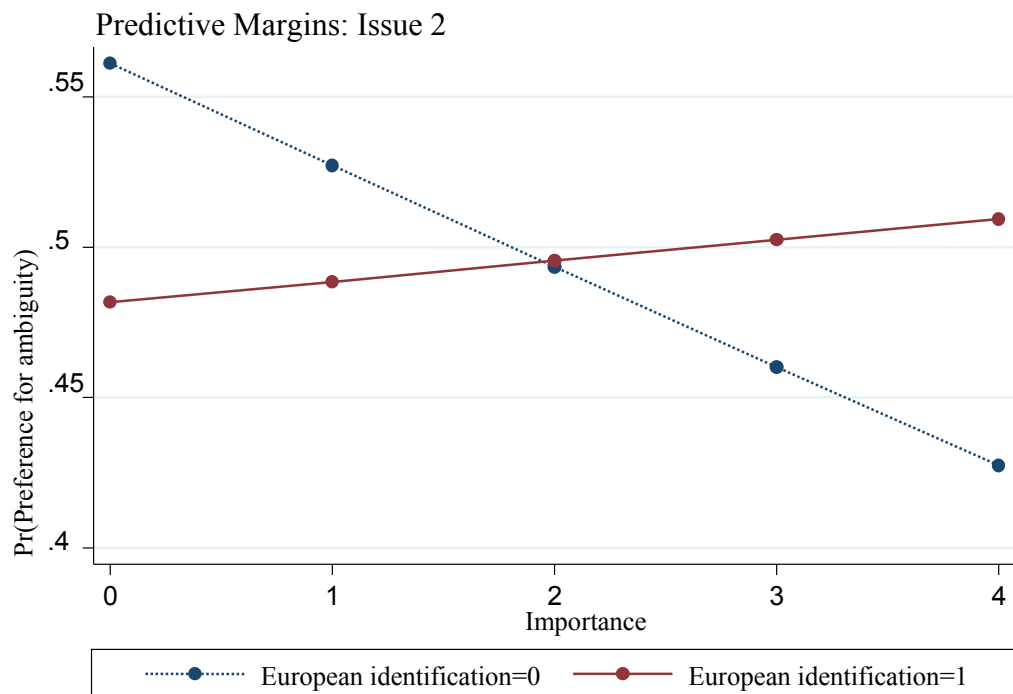
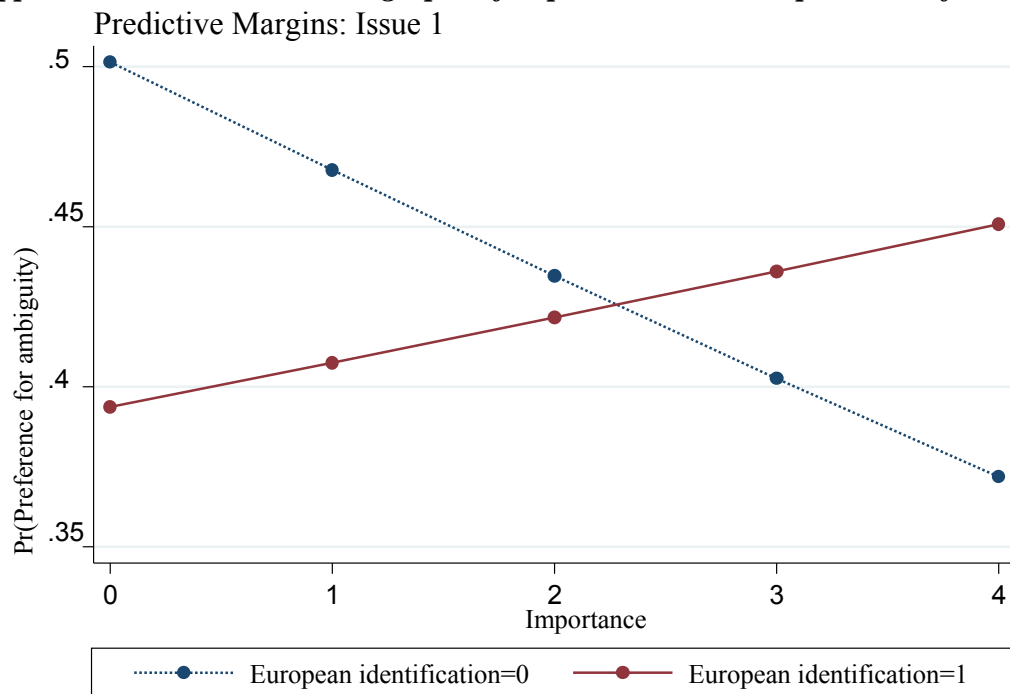
Appendix 5.2 The interaction graphs of importance and European identification – Group I
Predictive Margins: Issue 1



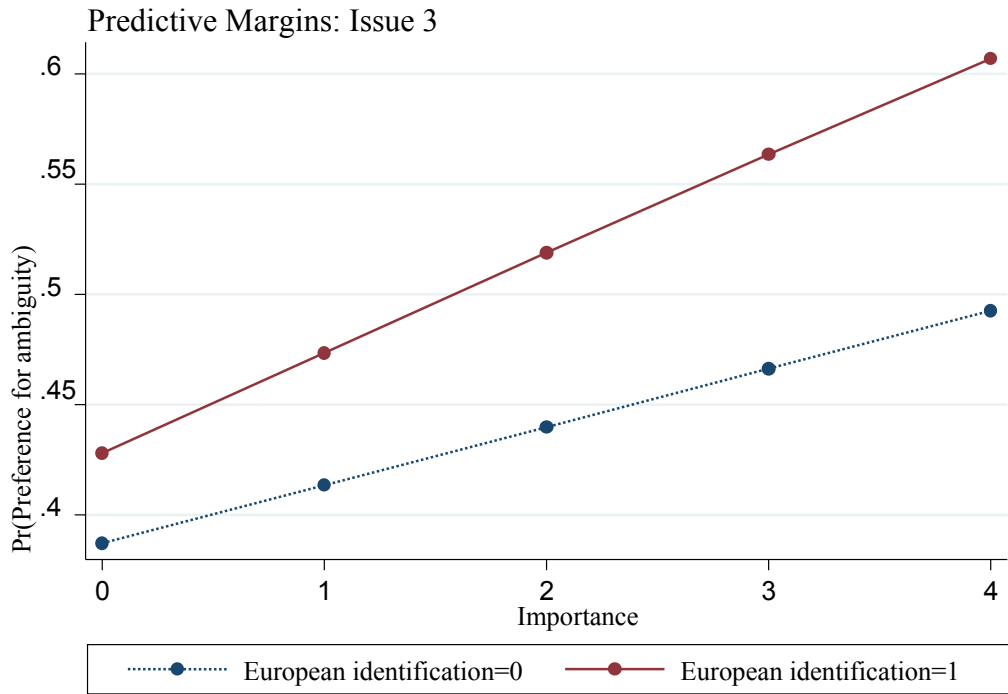
42	At importance is 0	Prob > chi2 = 0.3550
	At importance is 1	Prob > chi2 = 0.3693
	At importance is 4	Prob > chi2 = 0.3351
43	At importance is 0	Prob > chi2 = 0.8326
	At importance is 1	Prob > chi2 = 0.8343
	At importance is 4	Prob > chi2 = 0.8367



44 At importance is 0 Prob > chi2 = 0.8312
 At importance is 1 Prob > chi2 = 0.8186
 At importance is 4 Prob > chi2 = 0.7954

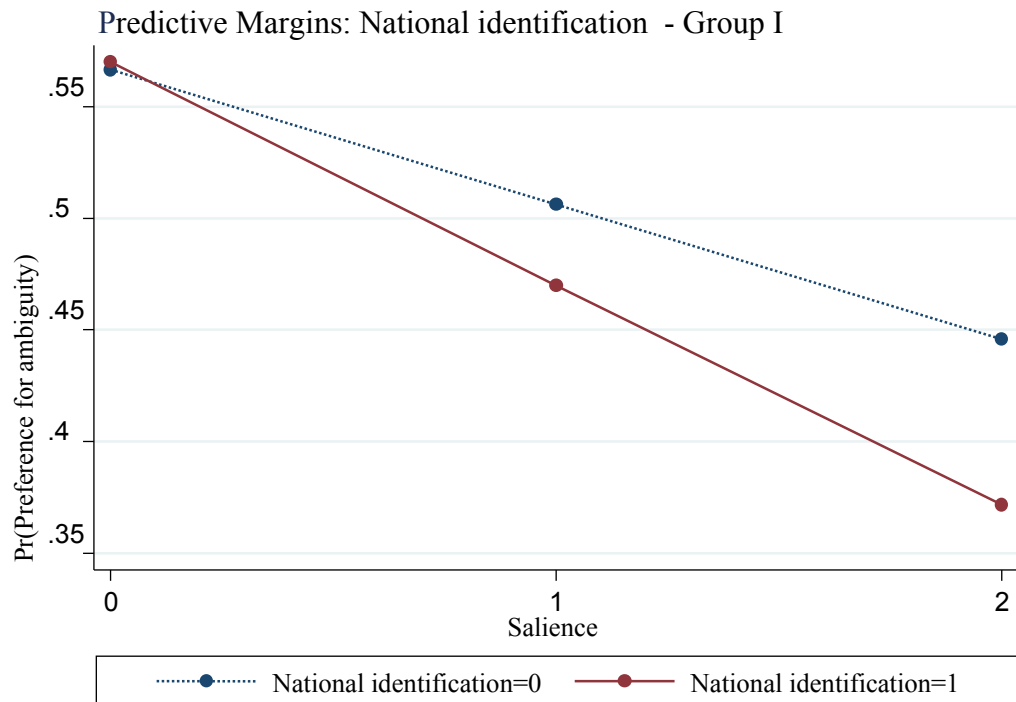
Appendix 5.3 The interaction graphs of importance and European identification – Group II

45	At importance is 0	Prob > chi2 = 0.3059
	At importance is 1	Prob > chi2 = 0.3154
	At importance is 4	Prob > chi2 = 0.3024
46	At importance is 0	Prob > chi2 = 0.4609
	At importance is 1	Prob > chi2 = 0.4685
	At importance is 4	Prob > chi2 = 0.4706

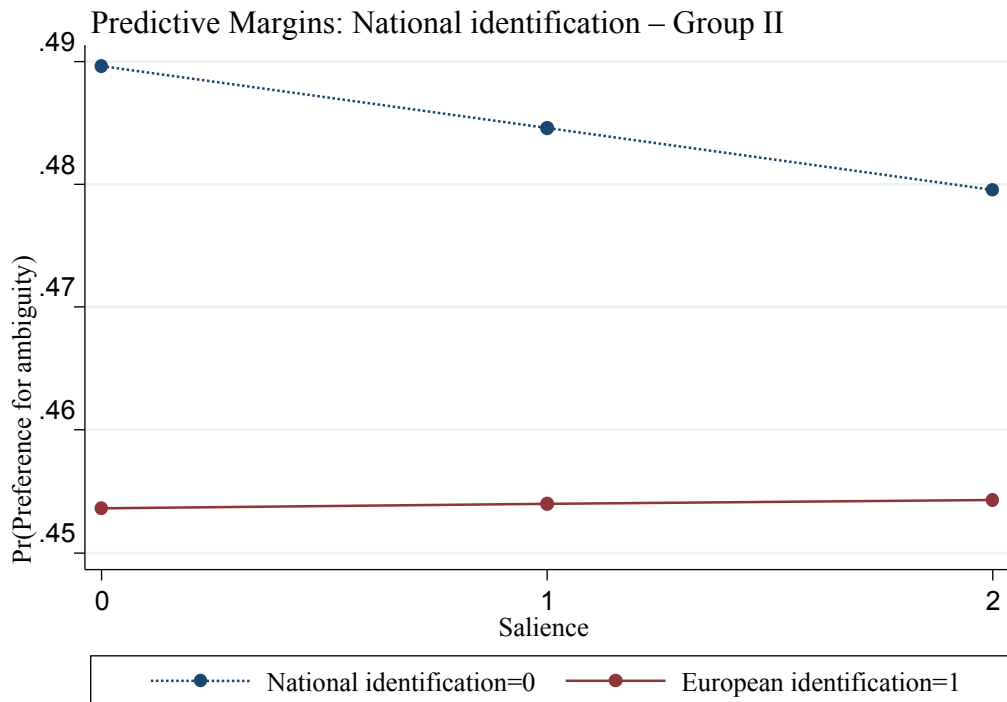
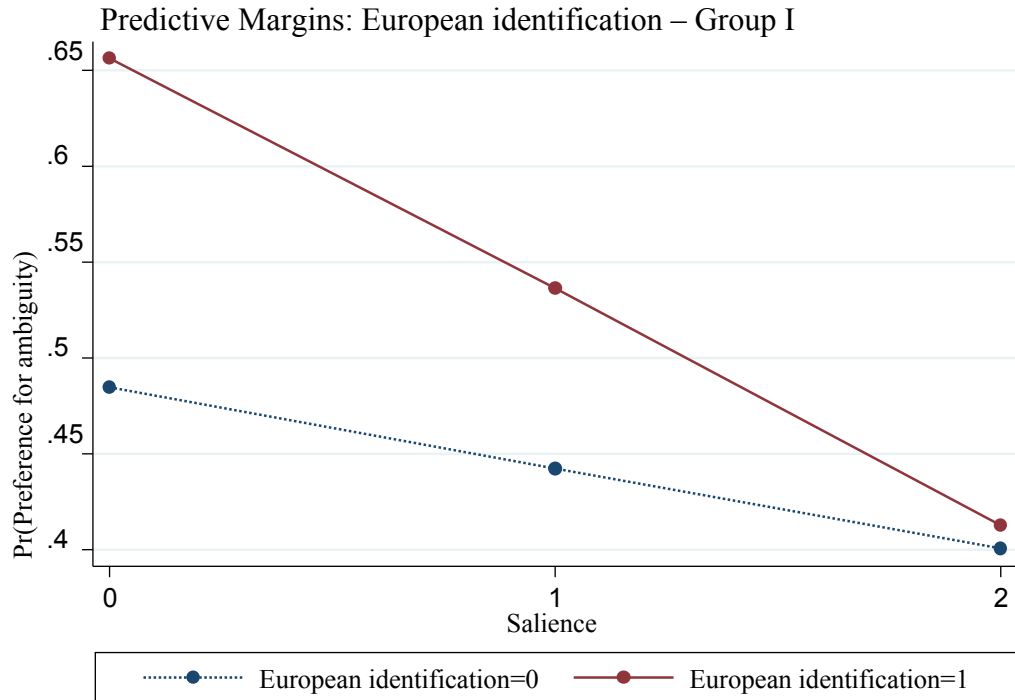


⁴⁷ At importance is 0 Prob > chi2 = 0.7371
 At importance is 1 Prob > chi2 = 0.7487
 At importance is 4 Prob > chi2 = 0.7797

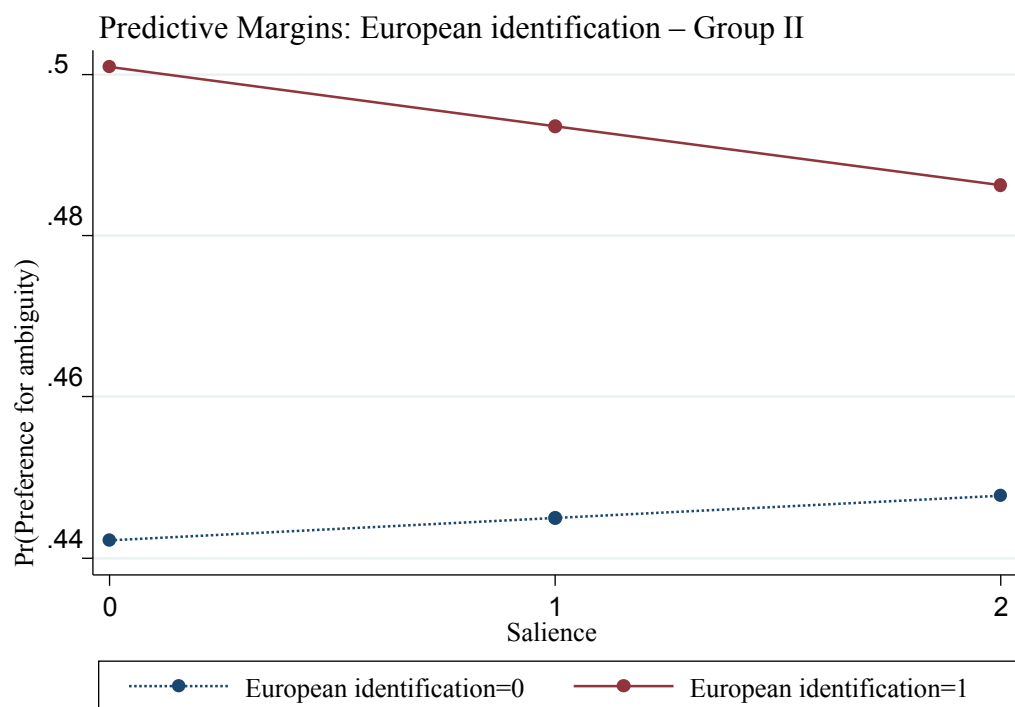
Appendix 5.4 The interaction graphs of salience and national & European identification – Group I & II



48	At salience is 0	Prob > chi2 = 0.5199
	At salience is 1	Prob > chi2 = 0.5399
	At salience is 2	Prob > chi2 = 0.5574



49	At salience is 0	Prob > chi2 = 0.2148
	At salience is 1	Prob > chi2 = 0.1995
	At salience is 2	Prob > chi2 = 0.1789
50	At salience is 0	Prob > chi2 = 0.8620
	At salience is 1	Prob > chi2 = 0.8620
	At salience is 2	Prob > chi2 = 0.8620



⁵¹ At salience is 0 Prob > chi2 = 0.7438
At salience is 1 Prob > chi2 = 0.7440
At salience is 2 Prob > chi2 = 0.7442

Chapter 6

General Conclusion

Main Contributions

In our quest to understand human behavior we focused on cognitive psychology and more specifically cognitive patterns, studying heuristics and social identification. We have seen that intuitive information processors rely more on these patterns in decision making compared to rational information processors, when we studied heuristics. Furthermore we have seen the importance of these patterns in preferences as well. Chapter 3 showed us how a heuristic influences voting preferences, and in chapter 5 we studied the potential role identification could have in this same preference development process. In an organizational setting we were able to under scribe the importance of the role of this pattern finding when we studied identification as well. It is clear that the role of patterns finding influences us very extensively. In day to day decision making, potentially in voting decisions, and in our work. With our research we add to all three of these areas of research.

In our study on biases we critically review previous studies that seem to generalize results on heuristics, and add to rather recent literature studying dual information processing. Our study on biases reveals that rational information processing reduces some biases, and that an interaction between rational and intuitive information processing potentially reduces biases to a further extent. We see that the measurement of the bias clearly impacts the outcome, an insight we have taken with us when designing the measurement for projection bias in our quest to understand voting ambiguity. We study the preference of ambiguity in a carefully designed experimental

setting so we can exclude diluting effects, controlling for risk attitude measured in a game situation and not as a self-reported variable which can becloud the outcome. By zooming in on projection bias, we come up with an alternative explanation for the preference for ambiguity in voting.

We have looked at identification on two different levels (professional and organizational) in an organizational setting to get a better feeling for these concepts. We have seen the importance of identification for job satisfaction and the relationship to another “big” organizational factor, task autonomy. In this study we find that organizational identification acts as a buffer for the negative effects of low task autonomy. We also learned amongst other things that identification with the profession and organization, although there is a great overlap in concepts, are clearly two different constructs and need to be treated separately. Continuing with our experimental setting in which we focus on voting ambiguity we look at another alternative “pattern finding” explanation, namely social identification. In this study on voting preferences we include national as well as European identification. We explain our theoretical thoughts with the concept of personal uncertainty, combining social identification literature with voting literature in a novel way. In this study we see that identification with an entity underlying a political issue seems to have an effect on voting ambiguity as well. Although based on our empirics we cannot draw a clear conclusion on the direction of the effect. It is clear that identification has an effect and that the level of ambiguity is issue-specific.

Limitations and suggestions for future research

It is clear that our four papers and three underlying datasets have their limitations: with limited datasets we cannot draw widely generalizable conclusions. The richness of these three datasets, all carefully designed and in a completely different settings, has given us a lot of insights into different areas, but at the same time limits us to take our insights to a next level as we cannot directly link our results to each other.

In this dissertation for example, we did not examine if rational information processing in voting preferences reduces projection biases, which would be a nice suggestion for future research; studying the traits of potential voters. Furthermore we kept the construct identification and heuristics separated from each other as we needed to limit the scope of this research. However, relationships between some heuristics and some identification entities exist. In in-group literature the relationship between identification with the group and in group bias has been widely acknowledged (amongst others Capozza & Brown, 2000). At the same time some other biases can potentially shield the identification (for example, Horton et al., 2015). These insights made us curious about the existence of a potential relationship between projection bias and national or European identification, as identification with an entity increases sentiments towards this entity, and it is often sentiment towards a candidate or position that potentially drives projection bias. As our research was not set up with the intension to research a relationship between the two we did not measure identification with the candidate. This, however, did not limit us to look at some preliminary results as identification with an underlying entity could trigger sentiment towards a position as well and therefore trigger projection bias.

In order to test this relationship we ran a multinomial logit regression model with projection bias as the dependent variable. We controlled for the position of the respondent, as the distance to the potential option might negatively impact projection bias. When a voter is expected to choose between two candidates (one precise and one ambiguous) far away from his/her own position an indifference regarding the two candidates can be triggered reducing the negative as well as positive projection bias. We find for group I (Scenario 3 & 4) that national identification has a significant positive effect on negative projection bias for two issues (issue 1 and 3) and a significant negative effect on positive projection bias on one issue (issue 2). (For group II the effect on issue 1 disappears, but the effects for issue 2 and 3 remain.) The results seem to be pointing into the direction of distrust when voters identify with the Nation. For European identification we only find significant results for issue 1 and 3 (for group I) where European identification is negatively related to negative projection bias. (for group II we find a significant positive effect of European identification on positive projection bias). These opposing results seem to hint that people with a strong European identification have more trust in policy making. Our strong and interesting results need to be addressed in future research to determine the exact role between identification and projection bias.

We would also like to conduct a field study to analyze actual voting behavior in order to test the hypotheses as formulated in Chapter 5. Our experimental setting aids to exclude diluting effects, but this might have been at the expense of personal uncertainty. By analyzing hypothetical decision making we might have lost the sentiment causing personal uncertainty.

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